

AIDS
TO THE TREATMENT
OF
DISEASES OF CHILDREN
—
SECOND EDITION

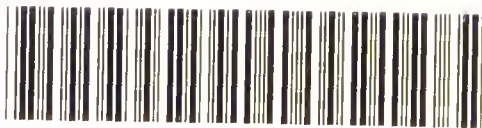


MC CAW

3/6

WS200
1899
M12a

BAILLIÈRE, TINDALL & COX.



22101662063

Gas

With the Author's Compliments.

AIDS
TO
THE DIAGNOSIS AND TREATMENT
OF
DISEASES OF CHILDREN
(MEDICAL).

BY

JOHN McCAW,

M.D., L.R.C.P., ETC.,

SENIOR PHYSICIAN TO THE BELFAST HOSPITAL FOR SICK CHILDREN.



SECOND EDITION.

LONDON: BAILLIÈRE, TINDALL & COX,
KING WILLIAM STREET, STRAND.
EDINBURGH: LIVINGSTONE. DUBLIN: FANNIN & CO.
GLASGOW: STENHOUSE.
1899.

2800 50

LONDON :
PRINTED BY WILLIAM CLOWES AND SONS, LIMITED,
STAMFORD STREET AND CHARING CROSS.

WELLCOME INSTITUTE LIBRARY	
Coll.	welMOmec
Call no.	WS 200
	1899
	M12a GA4

147

PREFACE TO THE FIRST EDITION.



IN writing the following pages it has been my aim to place before the student and busy general practitioner an account of the Diseases of Children in a concise and clear way. It will be well, I think, at once to state that the little work claims to be nothing more than a compilation; and here it is my wish to acknowledge, in the fullest manner possible, my great indebtedness to the following works, viz.: Ashby and Wright, "Diseases of Children," 2nd edit.; Eustace Smith, "On Disease in Children," 2nd edit.; Keating's "Cyclopædia of the Diseases of Children;" Goodhart, Henoeh, Carmichael, and Donkin.

It will, no doubt, be noticed that I have left out all reference to diseases of the skin. I thought this course preferable to writing in a meagre way on a subject that has lately grown very much in extent and importance; moreover, there are already several manuals on Diseases of Children that deal fully with diseases of the skin.

I desire to thank many friends for their aid in writing this book, as well as the Publishers for their unvarying courtesy.

BELFAST,

September, 1893.

PREFACE TO THE SECOND EDITION.



THE issue of a second edition of this little book has enabled me to make many changes in the text, as well as to add much new material. Articles on Sporadic Cretinism, Glandular Fever, Prolapsus Reeti, and Paraplegia have been included, and the etiology and pathology of such affections as Diphtheria, Whooping-Cough, Infantile Paralysis, and Pneumonia have been brought up to date in the light of the most recent research. In addition to the works previously consulted, I have had before me Allbutt's "System of Medicine," Dawson Williams' "Diseases of Infancy and Childhood," and the American Textbooks on "Diseases of Children," by Starr and Roth, while many valuable hints have been gleaned from Professor Whitt's "Dictionary of Treatment."

BELFAST,

November, 1898.

CONTENTS.



CHAPTER	PAGE
I. INFANT FEEDING—WET-NURSES—ARTIFICIAL FEED- ING—WEANING — — — — —	7
II. DISEASES OF THE DIGESTIVE ORGANS — —	16
III. DISEASES OF THE DIGESTIVE ORGANS (<i>continued</i>) —	23
IV. DISEASES OF THE DIGESTIVE ORGANS (<i>continued</i>) —	41
V. DISEASES OF THE LIVER — — — —	54
VI. THE SPECIFIC FEVERS — — — —	64
VII. WHOOPING-COUGH, ETC. — — — —	91
VIII. DISEASES OF THE RESPIRATORY ORGANS — —	106
IX. DISEASES OF THE CIRCULATORY ORGANS — —	138
X. DISEASES OF THE BLOOD — — — —	149
XI. DISEASES OF THE NERVOUS SYSTEM — —	160
XII. DISEASES OF THE URINARY SYSTEM — —	194
XIII. GENERAL DISEASES — — — —	202
APPENDIX — — — — —	225
PRESCRIPTIONS — — — — —	235
INDEX — — — — —	239



Digitized by the Internet Archive
in 2015

<https://archive.org/details/b21501300>

A I D S
TO
THE DIAGNOSIS AND TREATMENT
OF
DISEASES OF CHILDREN
(MEDICAL).

CHAPTER I.

INFANT FEEDING—WET-NURSES—ARTIFICIAL FEEDING—WEANING.

THIS most important subject very fittingly occupies the first chapter in the “Aids to the Diseases of Children;” and in assigning to it this prominent place, my reason must be that “improper feeding” of infants is the cause, directly or indirectly, of the very high death-rate amongst children in our large cities and towns. There is a general consensus of opinion in favour of the superiority of breast-feeding over artificial feeding; so that, as Dr. Rotch says, “It has become a scientific truth;” or again, as Dr. Ashby has it, that “the natural food of the infant is the milk from the breast of its mother;” therefore this point may be insisted on—that *the baby should be breast-fed in every possible instance*. No doubt there are many cases where this is not possible; for instance, the mother may be weakly and unable to bear the strain which suckling puts upon her; she may be consumptive; the secretion of milk may be almost *nil* or entirely absent; malformation of the nipples or extensive fissures of them may prevent the baby from obtaining the milk; or the child itself may be unable to suckle. These are

all good reasons why suckling cannot be accomplished; but I may take this opportunity of protesting against such excuses as the bother and trouble it involves, and the curtailment of social enjoyments it is sure to entail.

The first rule, therefore, in infant feeding will be that the infant is to be "nursed" or "suckled at the mother's breasts" for the first eight or nine months, and no other food of any kind whatever is to be thought of. It should be put to the breast a few hours after birth, and from this time forward regularity in the time of feeding is of paramount importance. Every hour and a half will be often enough during the day, a longer interval being allowed at night. A strong infant will empty the breast in about ten minutes, and during this time will extract about $1\frac{1}{2}$ to 2 ozs. of milk. As the infant's stomach enlarges, so the secretion of the breast increases, and after the first few weeks the intervals of nursing may be extended to every two hours; after the third month every three hours or so will be often enough, or six or seven nursings in the twenty-four hours, during which time it gets from 20 to 40 ozs. of milk. The common practice of giving the baby the breast whenever it cries cannot be too strongly condemned; such practice is not good for the child, and has a bad effect on the secretion of the breast, the milk becoming too watery after a long, and too rich and concentrated after a short, interval. So also the mother's health should be carefully looked after during the whole time the infant is being nursed, as it is impossible for one in ill health to give good milk. Certain drugs, such as morphia and Epsom salts, affect the milk, and so probably the baby; they should, therefore, be avoided. The mother's diet should consist of milk, porridge, soups, vegetables, fish, and light puddings; butcher's meat and stewed fruit may be allowed in moderate quantity; but pastry, raw fruit, and all highly spiced or seasoned food and alcoholic liquors had better be avoided. Plenty of exercise in the open air is very important. After the eighth or ninth month, if the child has thriven well and has cut a few teeth, it may be gradually weaned and fed

according to the directions given under artificial feeding; see below.

Wet-Nurses.—If the mother is unable to suckle her baby, a “wet-nurse” is to be procured, if possible. In choosing one, the following points should be remembered: Her own child should be a little older than the infant to be nursed—a month or six weeks. The child will nurse more easily and have better care from a multipara than from a primipara. She should not be under twenty-one years of age or over thirty-five years. A chemical analysis of her milk should be made, to ensure its quality. A medical examination of both the nurse and her infant is imperative. Her breast should be of moderate size, and give evidence to the touch of a good quantity of glandular and not too much adipose tissue; the nipples should be well-formed and free from cracks or abrasions of any kind whatever; on gentle pressure the milk should come freely from the nipple. Her throat, legs, the glands of the neck, and, if necessary, her genital organs should be examined, that any evidence of strumous or syphilitic disease may be excluded. Her own infant should then be seen, for its appearance gives one of the best tests of her capacity to nurse. It should be plump, have well-rounded limbs, and healthy skin and mucous membranes. The symptoms of early congenital syphilis should be looked for.

Artificial Feeding.—If the child *must be* brought up by hand, the most convenient substitute for human milk is the milk of the cow. Goat’s milk has some advantages. It is said the goat never suffers from tuberculosis, and we know the cow is very liable to suffer from this disease: this is an important consideration. Again, a goat can be kept with but little trouble or expense compared with a cow; and the difference in the composition of the two milks is not great. In the vast majority of cases, however, it is cow’s milk we shall have to resort to in practice, and in a short work like the present I must confine my attention to it alone, referring my readers for more exhaustive information to Dr. Cheadle’s

admirable handbook on "Infant Feeding," in which the subject is treated in a very masterly and practical way.

In giving cow's milk to an infant, it is fortunate we have the standard set by Nature in the composition of human milk to guide us. Here is the composition of the two milks side by side—

	Human (directly from the breast).	Cows (as received in towns).
Proteid, or albumen	1·8	4·0
Hydrocarbons, or fats	3·5	4·0 to 5·0
Carbohydrates, or sugar	7·0	4·0 to 5·0
Ash	0·2	0·7
Solids	12·0 to 13·0	13·0 to 14·0
Water	87·0 to 88·0	86·0 to 87·0
Reaction	Alkaline	Acid
Bacteria	Absent	Abundant
Specific gravity	1028-1034	1029-1033

The first point of importance in these two analyses is that human milk, as the child gets it from the breast, is absolutely sterile, or free from all noxious germs: this is a point of enormous importance. The next point is that the albumen in cow's milk is fully twice as great in quantity. Again, the sugar is deficient by about one-half, while the fat is about the same in both. It will be clear now that we must dilute cow's milk—*one-half at least*, so that the albumen will be reduced to the proper quantity, else we shall have that very common trouble set up of vomiting and the passage by the bowels of hard masses of undigested curd. It will be no less clear that, if we do this, we shall get a mixture very deficient in fat; but this difficulty can readily be got over by the addition of cream, and the proper amount of sugar can be obtained by the addition of sugar of milk. The cream to be had for sale is not constant in strength, and is liable to be stale and slightly acid, and that which has been skimmed off milk after standing for twenty-four hours is too stale for use as infants' food. A good cream for the mixture is obtained by the following method, suggested by

Dr. A. V. Meigs: Take a pint of good cow's milk, and place it in a tall cylinder in a cool place for three hours; draw off the upper half of this with a pipette inserted halfway down the cylinder. If three parts of this weak cream be now diluted with five parts of water, the amount of fat and curd in the mixture will be about equal to that in human milk. Thus—

Weak cream (as above)	3 ozs.
Lime-water	1 „
Pure water	4 „
Milk-sugar	2 teaspoonfuls.

This is Meigs's mixture. A simpler method than the above, is to allow a pint of good milk to stand for two hours in a tall cylindrical bottle which is supplied with a stop-cock at the bottom, by means of which the lower half can be drawn off and replaced with an equal quantity of a seven per cent. solution of sugar of milk; the composition of this mixture is—

Proteids	2 per cent.
Fats	3 „
Sugar	6 „

and before it is given to the infant, a twentieth of its volume of lime-water is to be added.

Poor people cannot afford cream, and for their infants the usual mixture adopted at first is cow's milk one part, water two parts, with sugar and a twelfth part of lime-water added. Such a mixture is of course much inferior to one containing cream, yet how many infants take it and thrive on it in our large centres of population! While taking this mixture, many infants pass considerable quantities of curd in their motions without apparently being the worse for it; but if they, in addition, show signs of colic and vomit sour-smelling fluid, then the quantity of milk should be reduced, and a little more lime-water added. After the first month, half milk and water, and after the third month and until the sixth, two parts of milk and one of water, should be the proportions. The

addition of barley or oatmeal water to the milk is good practice; for, besides forming a much finer curd, the mixture is more nourishing. Rotch of America has devoted much time to the question of infant-feeding, and that portion of his work on Pediatrics which is devoted to this subject, will well repay careful perusal; his substitute for the breast milk is as follows:—

Cream	1½ ozs.
Milk	1 „
Water	5 „
Lime-water	½ „
Milk-sugar	2 teaspoonfuls.

Another admirable substitute for human milk is Gaertner's humanized milk.* It is prepared as follows:—

The fresh milk, mixed with an equal quantity of boiling water, is placed in the centrifugal apparatus; the machine is revolved at such a speed that the outcoming streams become equal. From one spout pours all the cream and half the milk and water, and from the other spout the remainder. All the fat is thus obtained, and also half the proteids, half the sugar, and half the salts. To bring the sugar to the proper standard, 5 $\frac{7}{10}$ drachms of milk-sugar are added to every pint of this mixture before bottling; it is then sterilized in bottles and ready for consumption. The casein of this milk is said to coagulate in fine flocculent form, much like human milk.

Whey is a useful material, and may be given, with cream and sugar added, as a substitute for breast-milk. Thus—

Weak cream	½ oz.
Whey	1 „
Warm water	1 „
Sugar of milk	1 teaspoonful.

Feeding-bottles.—The simplest are the best, and those with

* Dr. Carpenter, *Lancet*, January 1st, 1898.

long iudiarubber tubes, corks, and a profusion of lettering and figuring on their surfaces, are to be condemned. The best bottle with which I am acquainted is Messrs. Allen and Hanbury's "Feeder," which has no tube, has a hole at each end, for the more ready cleansing, and a large teat which can be turned inside out. Another good bottle is the one supplied with Soxhlet's sterilizer, which is perfectly plain and fitted with a largo teat. The bottle, after being used, should be thoroughly cleaned and then inverted, which prevents dust getting into it; or kept immersed in boracic acid water or a solution of corrosive sublimate (1 in 10,000); it should be rinsed with sterile water before being used.

Sterilization.—The importance of sterilizing all milk received in large towns cannot be too strongly insisted upon. Consumption, diphtheria, scarlet fever, typhoid fever, and foot-and-mouth disease are some of the diseases which may be communicated to infants and children by means of contaminated milk; but, fortunately, the germs of these diseases are destroyed by bringing the milk, before it is used, to the temperature of boiling water, or even a less heat than this, as 70° C. continued for half an hour may suffice. The success of sterilization depends upon getting the milk fresh, so that it may contain as few bacteria as possible and no spores; if the milk has been kept for twenty-four hours, then a much higher temperature will have to be used. Milk which has been heated to 100° C. or higher, suffers certain changes which alter its nutritive qualities very materially: the fat emulsion is partially destroyed, a portion of the proteid constituent is coagulated, and the sugar is in part changed in such a way as to give a brown coloration to the milk. In consequence of these changes, therefore, sterilized milk loses much of its anti-scorbutic property, so that infants fed on it for long periods may develop scurvy, rickets, etc., and for similar reasons milk so treated should be given to the child undiluted. Milk may be sterilized by bringing it to the boil in a saucepan, after which it should be kept in a cool place; but a better method is to use a

sterilizer for this purpose, such as Soxhlet's, Escherich's, Hawksley's, or Aymard's.

Condensed Milk.—This offers a very ready mode of preparing food for a young child, and for this reason it has become very popular. I have frequently seen it given with the happiest results when the ordinary mixture of cow's milk did not agree, but I do not think it should be continued for lengthened periods. Accurate directions should be given as to the strength to be used, so that a graduated measure must be employed; for an infant three months old, it may be diluted 1 in 8 by weight, or 1 in 10 by measure. Thus —

	Condensed milk.	Diluted 1 in 8.
Proteids . . .	16·07 .	2·01
Fats . . .	12·10 .	1·5
Sugar . . .	40·0 .	5·0

In this diluted mixture it will at once be noticed that the “fats” are very deficient, and I have been in the habit of adding a teaspoonful of good thick cream to each feed, and, I have reason to think, with the best results.

Dried Milk Foods.—These foods are very convenient, besides being sterile. Messrs. Allen and Hanbury have prepared two forms, in both of which the percentage of proteids and sugar is the same as in human milk. The following analysis is from the *Lancet* :—

	Dried food.	Diluted 1 in 8.
Proteid . . .	14·25 .	1·78
Fat . . .	13·15 .	1·64
Sugar . . .	65·48 .	8·19

Here again the fat element is very deficient, so that a teaspoonful of good cream should be added to each bottle feed.

Amount of Food to be given.—This must be guided by the strength and vigour of the child, and by its power of digestion as shown by the character of the stools. An average infant of 7 or 8 lbs. weight should be fed every two hours during the

day for the first month or so, and should have from $1\frac{1}{2}$ to 2 ozs. at each feed; longer intervals should be allowed during the night. During the second month the time may be extended to every three hours, and the quantity increased to 3 or 4 ozs.; during the third and fourth months it may have 4 or 5 ozs. every three hours; and during the fifth and sixth months, 6 or 7 ozs. every three hours. After the sixth month, if the child has thriven well and gained steadily in weight, some form of starchy food may be added to its milk with advantage, such as wheaten flour, oatmeal flour, barley flour, or bread jelly. These must be thoroughly cooked, and made thin enough to pass through the teat of the feeding-bottle. Five meals in the day will, as a rule, be sufficient, 6 to 8 ozs. being taken at each meal. The first meal between 7 and 8 a.m.; the second between 10 and 11 a.m.; the third 1 to 2 p.m., the fourth 4 to 5 p.m.; and the fifth the last thing at night. Experience teaches that a sixth bottle will be needed during the night. After the ninth month, the amount of starchy food added may be gradually increased, and the bottle made up to 10 or 12 ozs. at each feeding. At this time, also, the baby may have a crust or a biscuit to nibble at. At the end of the first year, if the child has thriven well, and is strong and vigorous, the bottle may be gradually replaced by food of a more solid character, such as porridge and milk for breakfast; a drink of milk at 11 a.m., with a couple of biscuits; bread-crumbs and gravy, or finely mashed potato, with weak chicken soup or beef-tea for dinner at 2 p.m., or a lightly boiled egg with bread-crumbs; bread and milk at 5.30 p.m.; and a drink of milk with a biscuit at bedtime.

After eighteen months, small quantities of fish, fowl, or meat may be given, and rice, sago, or tapioca puddings, stewed apples, and preserved fruits may be allowed.

When the child is old enough to take its place at the family board, it should be taught to masticate its food thoroughly before it is swallowed, and also to drink freely of pure water. I think it a great mistake to give young children at this time

milk to drink with their meals instead of water, and I entertain no doubt but that much gastric trouble is caused by this practice.

Peptonized Milk.—In times of sickness, or where the child is very delicate, it may be advisable to predigest the milk, and by this means a difficulty may be tided over. In the early months of life, add 2 ozs. of boiling water to 2 ozs. of cold milk; mix, and add 3 grs. of Benger's peptonizing powder; let the mixture stand for ten minutes; add 1 or 2 teaspoonfuls of cream, sweeten with sugar of milk, and give at once to the infant without boiling. It is not desirable to use predigested milk for a long time, as it tends to weaken the functions of the stomach, and to produce anæmia and scurvy.

Weaning.—As has been already advised, the child should get the breast for the first nine months, at the end of which time it ought to be weaned, if it is healthy and well nourished. If it is delicate, and the mother's supply of milk is still good, there is no objection to let it have the breast for a couple of months more. The weaning should be accomplished gradually, and it will be well to avoid the summer months, or a time when the infant is cutting a tooth, in which to make a beginning. The bottle should be substituted once a day at first, then twice a day, and so on, until the breast is given up altogether. It is well to weigh the infant every week, as a gain in weight is one of the surest indications that it is thriving.

CHAPTER II.

DISEASES OF THE DIGESTIVE ORGANS.

SIMPLE CATARRHAL STOMATITIS.—Synonym, Stomatitis erythematosa. It may be of two kinds—local or general.

Definition.—An inflammation of the mucous membrane of

the mouth, of varying intensity, but stopping short of ulceration.

Causes.—Dentition; irritation from prolonged sucking at an artificial teat; too hot food; an excess of sugar; exposure to cold and wet; digestive derangements; pneumonia, pertussis, and the acute exanthemata.

Symptoms.—The child is feverish and irritable, the temperature rising, in exceptional cases, to 104° F. in the rectum. It refuses the breast from the pain which anything in the mouth produces; there is salivation, and the salivary glands are enlarged and tender. On the inside of the cheeks, gums, and hard palate, patches of inflamed mucous membrane are seen, or the whole inside of the mouth may be bright red, dry, and angry-looking. The tongue is often dry and red, or it may be furred down the middle and red at the tip and edges. Digestive troubles are common, such as diarrhœa, flatulence, and curdy stools.

Prognosis.—This is usually good, but in severe cases there may be produced loss of weight, dyspepsia, a catarrhal condition of the intestines with enlargement of the glands, and possibly tuberculosis.

Treatment.—Direct the mouth to be washed, after each time the child takes the breast or bottle, with cold sterilized water, to which has been added permanganate of potash (2 grs. to the oz.) or boracic acid (15 grs. to the oz.), or sodium bichlorate (20 grs. to the oz.), or zinc sulphate (5 grs. to the oz.), or sodium salicylate (10 grs. to the oz.). Be careful that no curd is allowed to remain between the cheeks and the gums, and see that the sucking-bottle, tube, and teat are perfectly aseptic. The mother, if the child is at the breast, should also wash her nipples in one of the above solutions after each nursing. When the mouth is cleansed, dust on the child's tongue a few grains of borax, and avoid using the common borax and honey, as the sugar in this preparation is sure to defeat your object by becoming rancid. If the affection does not yield in three or four days, then the inflamed mucous

membrane should be painted once daily with a solution of nitrate of silver (5 grs. to the oz.), the mouth having been first thoroughly cleansed with cold water. If the child is being bottle-fed, order all the milk to be sterilized; and if curdy, sour-smelling motions are passed, add a tablespoonful of lime-water, or a larger quantity of barley-water, to each bottleful. Give a dose of castor-oil, to be followed the next day with a mixture containing two grains of bicarbonate of sodium or salicylate of bismuth, with a few drops of tincture of rhubarb and aromatic spirit of ammonia in sweetened water (see R. 2).

APHTHOUS STOMATITIS.—Synonyms, Follicular stomatitis, Aphthæ.

Etiology.—No uniform local cause has ever been found. It is associated with pneumonia, agne, the acute exanthemata, and gastro-intestinal catarrhs. The foot-and-mouth disease in cattle can be definitely accepted as causative. In a recent epidemic near Berlin, studied by Siegel, an ovoid bacillus, 0.5μ long, was found in all cases. Starr believes the affection to be produced by some form of ptomaine circulating in the blood, which acts upon the terminal nerve-endings, producing an herpetic eruption which is the aphthous process. Fraenkel has found pus coeci as well as "gas-forming bacilli" in stomatitis.

Symptoms.—This condition is most common in children under two years of age, and it is often seen in an epidemic form attacking all the children in a house at the same time. There is an eruption of vesicles on the mucous membrane of the mouth, which are extremely sensitive and painful; they are circular or oval, and vary in size. After from twelve to thirty-six hours the vesicles burst, and disclose small ulcers, which are surrounded by inflamed areolæ. They vary in number from two or three to twenty or thirty. There is often considerable constitutional disturbance, the temperature being 103° or 104° F., the tongue coated, with vomiting, thirst, and diarrhœa. Salivation is profuse, and in weakly children the

vesicles may run together, and form ulcers of considerable size; when this takes place, the saliva and breath become offensive. The general symptoms may become aggravated, and the condition serious.

Bednar's *aphthæ*, or the *Plaques ptérygoidiennes* of Parrot, are two aphthous patches, seen one on each side of the median raphè near the junction of the hard and soft palates; they are round superficial ulcers one-quarter to one-third of an inch in diameter, and are produced by the pressure of the back of the tongue against the hard palate in sucking; they are not syphilitic.

Treatment.—*Local.* Make the child wash out its mouth frequently (every hour) with a solution of common salt, made the strength of sea-water, or one of the solutions given under Catarrhal Stomatitis, and dust a little borax powder on the tongue. If the little ulcers are sluggish, they may be touched with the lapis divinus (equal parts of sulphate of copper, alum, and nitrate of potash fused together) or brushed with a solution of nitrate of silver 10 grs. to the ounce of water. The stomach and bowels should be regulated with a dose of castor-oil or a grain of grey powder, with two each of rhubarb and soda (see R 3). The diet should be light and easily digested, such as milk and light soups, and care taken that farinaceous articles and sweets are avoided. In ordinary cases, little medicine is required; but if the child is not improving, and the ulcers are angry-looking and show a disposition to run together, give chlorate of potassium in 2 or 3 gr. doses. Stimulants are rarely called for.

ULCERATIVE STOMATITIS.—**Synonyms:** Stomacacæ, Putrid sore mouth.

Definition.—Inflammation of the mucous membrane of the month, which speedily results in extensive ulceration, more especially of the lower gums, accompanied with much fœtor of the breath. It is frequently contagious, and is probably due to a specific germ.

Causes.—The period of second dentition, or between the

ages of three and ten years; insanitary surroundings; destitution; the tubercular diathesis; the spring, summer, and autumn months; caries of the teeth; tartar round the teeth; neglect of cleanliness of the month; scurvy; rickets; measles; scarlatina; pertussis and typhoid fever; and poisoning by mercury, lead, copper, or phosphorus.

Symptoms.—The first thing that is noticed is the increased flow of saliva; the gums become red, swollen, and spongy-looking; mastication is painful; salivation is copious; and the breath is very offensive. Numerous irregular ulcers are seen on the gums, greyish in colour, and surrounded by a zone of redness; these usually spread to the tongue, cheeks, or lips, and the ulcerative process is generally confined to one side of the month. The teeth opposite the ulcerated gum become loose, and often fall out. Chewing is very painful; the sub-maxillary glands are swollen and tender; the child is out of sorts generally; the temperature is 102.5° or 103° F., and in bad cases there may be necrosis of the jaw.

Treatment.—The same local treatment as in the preceding must be used. Insanitary surroundings should be counter-acted, and an abundant supply of fresh air insisted on, the child being made to spend most of the day outside. A liberal supply of nourishing food, with stimulants, should be given. Chlorate of potassium is the drug here, and it must be given at once and persevered with; 3 grs. every four hours to a child of two years, or 5 grs. for one five or six, will be the proper dose to begin with, and if necessary pushed to large doses, as much as 15 grs *ter. in die* having been given. Tincture of the perchloride of iron may be combined with the salt.

CANCERUM ORIS.—**Synonyms:** Gangrenous stomatitis, Noma.

Definition.—Is a rapidly progressing necrosis of the gum or cheek, which is commonly fatal.

Causes.—Insanitary conditions and poverty. It may follow measles, typhoid, scarlatina, or small-pox. No matter how it comes on, it is always seen in the very lowest condition of

vitality. Sansom has described an organism which he found in the blood and diseased tissues.

Symptoms.—It begins as a painful spot on the inner surface of the cheek; it spreads very rapidly, and soon the whole depth of the cheek is involved. Seen from the outside, the cheek is swollen, pale or livid, and soon a black spot appears in the centre; the cheek is perforated, the edges of the opening are black, and the sloughing process spreads rapidly. The breath and saliva are intensely foetid; the pulse is small and frequent; but usually the temperature is little if at all elevated. In bad cases the gangrenous process spreads to the gums, and causes rapid and widespread destruction of tissue; large blood-vessels may be opened in its course, and hæmorrhage may still further complicate matters. Pneumonia is very liable to supervene, owing to septic absorption. If the case is seen early, and vigorous treatment resorted to a certain number of these cases recover, but the affection is very fatal.

Treatment. *Local.*—Free local application of strong nitric acid or the actual cautery, after which the part is to be powdered with iodoform and smeared with carbolic oil.

General.—Abundance of strong nourishment, such as eggs, pounded raw meat, milk and brandy, and meat extracts. Fresh air should be freely admitted to the room, and the steam-spray kept playing constantly with carbolic acid 1 in 30. For medicines, quinine and iron, or ammonia and bark, may be given.

PARASITIC STOMATITIS.—**Synonyms:** Thrush, White mouth, Sprue.

Definition.—An affection of the mouth, characterized by the development of certain fungi on the mucous membrane.

Causes.—This form of stomatitis is due to the presence and growth in the epithelium of the mouth, of a species of cryptogam first discovered by Berg of Stockholm, and called the *Oidium albicans* by Robin. The micro-organism of Thrush is most probably a link between the yeast fungi (*Saccharomyces*) and the mould or thread fungi (*Hypomyces*). (Fracnkel.) Grawitz believes it to be identical with the yeast fungus

or wine ferment (*Saccharomyces mycoderma*); Rees believes it to be a yeast fungus, to which he gave the name *Saccharomyces albicans*; and Plant thinks it is the same fungus that is found growing on sweet fruits and rotten wood (*Monilia-candida*).

In order that this fungus may grow and thrive, certain conditions are necessary, such as an unhealthy state of the mucous membrane; insanitary surroundings; hot weather; improper feeding; and dirty sucking-bottles. It is rarely seen in breast-fed babies, and is most common during the first few weeks or months of life.

Symptoms.—Difficulty of sucking, or pain in doing so, is first noticed; there is redness of the mucous membrane, with some rise of temperature before the white patches appear; the bowels are disturbed, with green, curdy, and sour-smelling motions, which give rise to redness and excoriation of the nates, and there may be vomiting as well.

The affection appears in the form of small white points or scattered patches on the tongue, cheek, lips, and palate; they are firmly adherent to the mucous membrane, but if one is forcibly removed, a red and bleeding surface will be left behind. These patches look exactly like pieces of milk curd, for which they are mistaken until one tries to remove them. In mild cases these patches are few in number and confined to the mouth; in severe cases they run together, so as to involve the whole of the buccal cavity, and may further involve the œsophagus, stomach, and intestines.

Examined microscopically, the patch is seen to consist of epithelial cells, yeast fungi, bacteria, and thread-like filaments.

Treatment.—Perfect cleanliness of all sucking-bottles, tubes, teats, etc., is of the first importance, and the directions given under “Follicular Stomatitis” should be strictly followed out. Any gastric derangement should be set right with a little rhubarb and soda, and feeding suited to the age of the baby only allowed. Fresh air, and warmth to the abdomen by means of a flannel binder or pad of wadding, are important adjuncts.

CHAPTER III.

DISEASES OF THE DIGESTIVE ORGANS—*continued*.

ACUTE GASTRIC CATARRH.—Catarrh of the stomach is very common in children in the spring and summer months.

Causes.—Errors of diet; exposure to cold and wet; drinking cold water when the body is heated; the poison of the zymotic fevers; dentition; and rickets. One attack predisposes to another.

Symptoms.—These often set in suddenly with vomiting, headache, and fever, the temperature quite often reaching 104° F. The child is chilly, and sits over the fire; is dark under the eyes or flushed. If the catarrh extends to the duodenum, there is vomiting of bile-stained fluid, and the conjunctivæ are often slightly jaundiced—gastro-duodenal catarrh. The appetite is lost; the tongue is thickly furred (white or yellow); and there is considerable thirst. Diarrhœa may be present if the catarrh has extended to the intestines, but constipation is the rule. The attack lasts for a week or so. In strumous subjects the symptoms may be (often are) very severe. There is a non-febrile variety, in which all the symptoms are milder, and the attack is put down to biliousness. Such children suffer from constipated bowels, are a bad colour, have capricious appetites, and very often an offensive breath. They have a predilection for puddings, sweets, and pastry, and I have often found a family history in one or both parents of dyspepsia. Round or oval depressed patches are often seen on the dorsum of the tongue.

Diagnosis.—*From Typhoid.*—Gastric catarrh begins much more suddenly, the temperature rising at once to 104° F. or so; frontal headache is not prominent; there is little delirium

at night; and the spleen remains normal. The attack is at an end in a week.

From Acute Tuberculosis.—Again the sudden onset will help you, together with the high fever. The expression is not distressed-looking; there is no œdema of the hands and feet; and the family history is important, if favourable.

Treatment.—Counteract errors of diet, and, while fever is prominent, give veal broth and peptonized milk. When vomiting is troublesome, small and frequently repeated doses of calomel ($\frac{1}{4}$ of a grain) and sodium salicylate (1 gr.) may be given dry on the tongue every hour until eight or ten doses have been taken, and between the doses small pieces of ice may be given to suck; a weak mustard poultice—1 part mustard and 6 or 7 flour—will be of use applied to the epigastrium for an hour. Open the bowels with castor-oil, and give bicarbonate of sodium with aromatic spirit of ammonia (R 2); after the fever has subsided, hydrochloric acid and pepsin wine will help to restore digestion (see R 4); or liq. ferri pernit, 1 minim, tr. calumb, 6 minims, with glycerin and water to 1 drachm is recommended by Dr. Lewis Smith.

When the attack has subsided, a very guarded return to ordinary diet must be made, and only plain food combined with regularity of feeding allowed. Plenty of open-air exercise, with warm clothing, especially over the stomach and bowels, is of little less importance; and cold sponging, followed by vigorous friction, will be useful.

CHRONIC GASTRO-INTESTINAL CATARRH. — **Definition.**—This is a chronic inflammatory condition of the glandular tissue of the stomach, which gives rise to a diminution in both the quantity and the quality of the true glandular secretion (hydrochloric acid and pepsinogen), but attended with the formation, sometimes in large quantities, of an alkaline mucus which possesses no digestive powers. In some cases the intestines seem to escape the catarrhal process, and in other cases the intestines may be the only part of the alimentary canal which appears to suffer; but in the majority

of cases, especially in infants and young children, the whole of the alimentary tract may be involved. *Parrot* gave the name of athrepsia to this complaint, and it is also known by the terms chronic diarrhoea, chronic vomiting, malnutrition, and simple atrophy, according to the prominence of one or other symptom.

Causes.—Improper feeding; insufficient food, as where the breast-milk is poor in quality; it may follow closely on an attack of measles, whooping-cough, or broncho-pneumonia; and it is not uncommon in infants that are congenitally weak or premature. It is rare in children over eighteen months old, being most common in infants under six months.

Symptoms.—These may be divided into three stages, viz.—

1. There is diarrhoea with green, curdy, and sour-smelling stools, or there may be much mucus passed; flatulence and colic; restlessness, and often some stomatitis. Vomiting is rarely absent, and may be severe and almost constant; the vomit is sour-smelling and curdled, or it may be tinged with bile. Wasting is never long delayed.

2. All the symptoms persist and are intensified; wasting becomes well marked; the stools present various appearances, both as to colour and consistence, but are never natural, being for the most part loose and frequent, or pale and putty-like, with a peculiar odour; at other times they are of a dark brown colour from the presence of altered bile. The child is never satisfied with what it gets; it cries and kicks, for which it is given laudanum, etc., “for the pains;” the skin is dry and hangs in folds; various skin-eruptions make matters worse; the temperature is sub-normal; the face wears a pallid, earthy tint, and wasting advances rapidly.

3. The child’s cry is now a mere whine; it becomes drowsy, and takes little notice of anything, and as the anæmia increases, the face, hands, and feet become œdematous. Death may be preceded by muscular twitchings or general convulsions.

Complications.—Broncho-pneumonia; acute general tuberculosis or tuberculosis of the mesenteric and mediastinal

glands; tetany is also common; and if the child survive long enough rickets is sure to be developed.

Morbid Anatomy.—The mucous membrane of the stomach and intestines is atrophied, thin, and pale, and the glands are compressed, and finally destroyed by masses of leucocytes: these changes are usually most marked in the ileum and colon, especially about the sigmoid flexure. The microscope reveals extreme wasting of the mucous membrane, with atrophy of the glands of the stomach and intestines; in some places the glands have entirely disappeared. Numerous micro-organisms are present.

Treatment.—As a rule, an infant suffering from athrepsia, or food atrophy, will require to have its diet completely remodelled. If it is being breast-fed, the milk should be examined, to ascertain its composition, and the health and mode of living of the mother inquired into. It is rarely necessary to take a child off the breast. In bottle-fed babies, it is of the first importance that absolute cleanliness of all bottles, tubes, teats, and milk-pans should be insisted on; and, when diarrhoea is a prominent and troublesome symptom, milk must be used very sparingly or stopped altogether, and small quantities of whey and barley-water, white of egg and barley-water, raw-meat juice or peptonized milk given instead.

Having regulated the diet, a small dose of castor-oil or rhubarb and soda, or a few grains of calomel with light magnesia, will be useful to clear away any offending masses of curd, and then half a drop of liquor arsenicalis, with two grains of bicarbonate of sodium in a few drops of spirit of chloroform and water to a teaspoonful should be given three or four times a day (see R. 1). If diarrhoea is the trouble, and the stools are curdy and offensive, a grain each of grey powder and Dover's powder at bedtime, or salol or salicylate of bismuth (3 grs.), or the latter combined with tr. opii (m i.), and chalk mixture should be tried. If bloody mucus is passed with much tenesmus, an enema of starch with 5 grs. of ipecacuanha powder, or 2 or 3 drops of laudanum, or an enema

of nitrate of silver (gr. 5 to the oz.), at bedtime should be given. The child should be taken into the open air as much as possible, care being exercised that it is warmly clothed, and a pad of wadding over the abdomen with a firm binder applied should never be omitted.

DIARRHŒA.—With the advent of warm weather in June, July, and August, diarrhœa becomes very prevalent in large centres of population. It is met with in three grades of severity, namely, (a) simple non-inflammatory diarrhœa; (b) inflammatory or zymotic diarrhœa; (c) cholera infantum.

1. SIMPLE NON-INFLAMMATORY DIARRHŒA.—In this form there is derangement of function without anatomical changes, there is no fever, and little or no gastric disturbance.

Causes.—Improper feeding, but especially improper hand-feeding—such as giving the child sour milk or milk just “on the turn,” unripe fruit, or fruit over-ripe, or articles of food unsuited to its age; emanations from the soil and the inhalation of sewer gas may also give rise to it.

It may also be caused by the mother’s health being at fault, by drugs given to the mother, or by dietetic errors on her part; frequently also by menstruation or pregnancy, or by various influences, such as grief, exhaustion, or the like. The manner in which hand-feeding is performed has been blamed—and justly so. Hand-fed children are almost always overfed; the bottle is placed in the crib, and the child takes a pull at it every now and again. Another common cause is the practice of preparing for the child in the morning the whole day’s supply of food, and allowing it to stand about till it is required; in the hotter months it does not remain many hours sweet, and is often quite unfit for the child long before it reaches it.

It may be due also to chilling of the surface from insufficient covering on the legs and lower parts of the body; to impure cow’s milk, due to disease in the cow, or to the care and food of the cow; to adulteration or pollution of the milk in the process of delivery; to dirty utensils, pails, pans, or cans, in which the milk is kept; and last, but not least, to dirty or

improper feeding-bottles. *Baginsky* found in the stools of infants suffering from summer diarrhoea many saphrophytic bacteria, and he thinks that the decomposition products formed by these micro-organisms are the cause of the affection. No specific pathogenic organism has yet been discovered.

Symptoms.—The attack occurs suddenly, and is preceded for some hours by griping pains. There is nausea, a furred tongue, restlessness, and peevishness, followed by a discharge of thin feculent matter containing lumps of undigested food, or curd. These dejections have often an offensive smell, are frothy, and are followed later by smaller ones, more watery and slimy, showing an excess of mucus and an acid reaction to litmus. There is no vomiting, and the temperature is not elevated. The attack lasts from twenty-four hours to two or three days, and, if neglected, often passes on into the next variety.

Treatment.—Give a full dose of castor-oil, especially if the motions are lumpy. After this give opium, either in the form of paregoric or Dover's powder, 6 to 10 mins. of the former, or 1 gr. of the latter, to a child one year old. Keep the abdomen warm by means of either a pad of cotton-wool or a flannel binder, and the following day give R 5 or R 6. If the child is being nursed, nothing but the breast is to be allowed at regular intervals. If it is being hand-fed, sterilize the milk, and add to each bottle-feed an equal quantity of barley-water and ten drops of the saccharated solution of lime. It will rarely be necessary in this variety to abandon milk altogether.

2. INFLAMMATORY DIARRHŒA, OR ENTERO-COLITIS.

—The causes of this form are those already enumerated as giving rise to the simple variety. Drinking contaminated water; the effluvium from decaying organic matter given out by the putrefying refuse of large cities; living in a badly drained and crowded house—each or all give rise to it in many cases. There is likely to be a strong septic element in many cases of this variety.

Symptoms.—The attack often begins as a mild diarrhoea, and gradually passes on into this more severe kind. There is

vomiting, and considerable rise of temperature (103° F. or so); the child rapidly wastes; the eyes get hollow and the face pale; the pulse is rapid and feeble; and a typhoid state is often reached, with dry, brown tongue, the child dying with all the signs of collapse. The dejections are thin and watery, brownish or greenish, and very irritating and offensive. There may be considerable tenesmus, and prolapse of the bowel is common.

Treatment.—Stop all milk-food at once, except in the case of an infant at the breast, when it should get nothing else. If the child is only a few months old and hand-fed, try and get a wet-nurse for it; if you cannot, give it whey and cream, or whey and barley-water, or barley-water and cream, or white of egg and barley-water, or peptonized milk—these should be given cold, and in small quantities at a time. A teaspoonful of cream to a large cupful of barley-water or whey will be sufficient. If you fail with one of these mixtures—and you often shall, in my experience—try weak veal or chicken tea, diluted with an equal quantity of barley-water or whey. More obstinate cases still will yield to raw-meat juice or Valentine's meat-juice. Professor Whittall speaks highly of Nestle's food in these cases, made fresh each time.

As to drugs in this affection, a powder containing bismuth, soda, and Dover's powder will be of service (see R 6) night and morning, and during the day the mixture recommended in the simple form of diarrhoea (see R 5). Small doses of calomel frequently repeated, as $\frac{1}{4}$ of a gr. every hour, can be given dry on the tongue, and should have a trial; or resorcin ($\frac{1}{4}$ to 2 grs.) in water, or salol or salicylate of sodium in 2 or 3 gr. doses. The laudanum-and-starch enema is indicated where there is much straining and dischargo of mucus. Ipecacuanha is a useful drug, and may be substituted for the laudanum in the foregoing enema in the dose of 5 grs. to 2 ozs. of thin starch. It is often given where there is much vomiting, in drop doses of the wine in a teaspoonful of water every hour. Food of any kind should be withheld for some

hours when the symptoms are urgent, and only teaspoonful doses of a solution of salicylate of bismuth, 10 grs. to the oz., given at short intervals; small bits of ice may be placed on the tongue from time to time, and a sinapism applied over the epigastrium for fifteen minutes. Much benefit will follow a change of air, with iron and quinine tonics and cod-liver oil, when the attack is at an end.

The parents should be warned against giving the child unsuitable articles, such as currant-cakes, oranges, potatoes, vegetables, and fruits, for some time after the attack has subsided, because relapses are serious and readily brought about.

3. CHOLERAIC DIARRHŒA, ACUTE GASTRO-INTESTINAL CATARRH, ZYMOTIC DIARRHŒA, OR CHOLERA INFANTUM.—These are the names by which the third variety is known.

Causes.—This form is most likely due to a distinct micro-organism akin to the comma bacillus of Asiatic cholera. It is very rarely seen in breast-fed babies, and Professor Whitla writes, in his "Dictionary of Treatment," that "sterilized milk is a perfect safeguard against ordinary summer diarrhœa, or the more severe cholera infantum." It is commonly seen amongst the poor of large cities, and during very dry and hot summers.

Symptoms.—There is obstinate vomiting and very persistent diarrhœa. The vomited matter changes from the contents of the stomach to mucous fluid; thin watery fluid tinged with bile; or it may be pure bile itself. The dejectitious pass from the contents of the bowel to a thin offensive fluid consisting largely of serum, and the quantities of this passed are quite astonishing. Wasting is rapid and extreme; thirst is urgent; and only a few hours are sufficient to produce the pinched features and depressed fontanelle of this affection. The pulse is very rapid and thready; the temperature is 104° or 105° F. Unless a stay can be put to the disease, a state of profound collapse is reached, and, the coma increasing, the child dies quietly or in a convulsion.

Treatment.—When the vomiting is very severe, drop doses of the glycerin of carbolic acid in a teaspoonful of water every hour should be tried; and here again the small doses of calomel on the tongue should be given. All food by the mouth had better be stopped, and small pieces of ice given to suck. Liq. hydrarg. perchlor. has been found useful in some cases, given in five-drop doses every two hours. Dr. Siebert warmly advocates the use of stomach washing in cases where the vomiting resists ordinary treatment, his experience being that children usually go to sleep in a few minutes after the operation, and wake up greatly benefited.

Dr. Holt, of New York, relies most on the hypodermic injection of morphia and atropine, and he advises small doses repeated as being preferable to one large dose. For a child a year old, $\frac{1}{30}$ gr. of morphia with $\frac{1}{800}$ gr. of atropine may be injected and repeated in an hour. I can confidently recommend the hypodermic use of morphia in these cases, having used it on many occasions with signal benefit: it soothes the child so that it often falls into a quiet sleep for a few hours, and when it awakens you will find that the stomach will retain a few spoonfuls of light nourishment. After this lull in the attack, one or other of the antiseptic drugs before mentioned may have a trial.

Henoeh recommends the free use of a one-per-cent. saline solution hypodermically. Hyperpyrexia can only be met by the cold bath and ice-water injections. Brandy and ether may be given hypodermically in desperate cases. Hot fomentations to the abdomen give some comfort, and the general body-heat should be maintained.

CONSTIPATION.—**Causes.**—Errors of diet; atony of the bowel, or sluggish peristaltic action; the habit of giving laudanum or soothing syrups to children; deficient secretion of bile and of the intestinal juices; and the want of exercise. It may be a symptom of cerebral disease, or due to some congenital malformation of the intestine, and in some cases it is undoubtedly hereditary.

Symptoms.—*In Infancy.*—The motions are large and solid, or pasty; the complexion is pasty and dull, and the child is fretful at night. Flatulence is an early symptom, and may give rise to violent attacks of colic. Palpation will often reveal hard masses in the colon. If of long standing, the health suffers, and the child gets flabby and emaciated.

In Older Children.—There is muddy complexion; diminished appetite; furred tongue, and unpleasant breath. They suffer from headaches, and are dull and listless. In neglected cases impaction of feces may take place, and lead to serious trouble.

Treatment.—The diet is the first consideration, and should be carefully regulated, excess of starchy matters being avoided.

In infants, the complaint is almost entirely confined to those brought up by hand. If it occurs in breast-fed babies, the health of the mother or wet-nurse should be inquired into. Her milk may be poor, or her own diet constipating. Let her improve the quality of her food, and take gruel, oatmeal porridge, stewed fruit, or the like. If the infant seems unable to expel the motions properly, gentle massage of the abdominal muscles with the oiled hand; a small soap-and-water or glycerin enema; or a soap suppository, will be the proper means to use. In hand-fed babies, in addition to careful regulation of the diet, a tablespoonful of fluid magnesia, or the size of a bean of manna dissolved in a tablespoonful of warm water, may be added to each half-pint bottle of milk. Massage of the abdominal muscles is of undoubted service, and it might be combined with cold sponging beforehand; or the following embrocation may be used as advised by Eustace Smith*—

R: Tr. aloes $\frac{5}{8}$ i
 Lin. saponis ad. $\frac{5}{8}$ iii

beginning in the right iliac region and following the large intestine in its course round to the rectum. I have seen a tablespoonful of castor oil, applied on flannel to the abdomen, overcome the difficulty. Nux vomica with belladonna and senna

* On "Disease in Children," 3rd edit., p. 622.

often answers well (see R 7), and *caseara sagrada* rarely fails to relieve. Enemata of soap-and-water or glycerin, suppositories, *ealomel*, or the stronger purgatives had all better not be resorted to until the simpler remedies above named have had a fair trial.

After the age of infancy, regularity of meals as well as of the habits should be attended to, the child being made to go to stool every morning at the same hour. Pastry, salt meats, farinaceous foods, and sweetmeats should be avoided in favour of oatmeal porridge, green vegetables, stewed fruit, and figs. Cold bathing, with vigorous frictions; plenty of open-air exercise; "early to bed and early to rise,"—will be beneficial. Aloes and iron often do well (see R 8), or Sir Andrew Clark's pill may be given (R 9). The mineral waters come in useful in these cases, given the first thing in the morning in plenty of hot water. *Tamar indicn*, *caseara sagrada*, *ealomel*, etc., may have to be resorted to. I have seen a teaspoonful of glycerin given three times daily very effective, and it is readily taken by children.

DYSENTERY.—Synonyms.—Acute ileo-colitis, Dysenteric diarrhoea.

Definition.—A specific disease, which occurs in epidemics in tropical countries; it is rare in England, except in the chronic form.

Causes.—Foul air; impure water; bad drainage; and rapid variations of temperature, are the chief causes. Poverty and digestive derangements are predisposing causes.

Pathology.—The mucous membrane of the colon and rectum is swollen and injected; patches of thin membranous exudation are found, or there may be superficial ulceration. The solitary glands are enlarged, and other organs may be found congested and swollen.

Symptoms.—The onset is sudden, with vomiting, severe pain in the abdomen, and fever, followed by straining and the evacuation of the contents of the rectum; later, the straining is repeated, but this time it brings away only mucus and blood.

The griping pains continue, and there is general tenderness of the abdomen. The face expresses the pain the child is suffering; it cannot find rest in any position, neither can it sleep. The disease may not go any further than this, and the child may recover; but a more severe form, ushered in with rigors or convulsions, tearing pain, and constant tenesmus, with prolapse of the bowel may prove rapidly fatal. The mucus is bloody, or pure blood may come away. If the child survives long enough, sloughs and much shreddy matter are discharged, and the odour of the motions is very foetid. The weakness becomes extreme, the face much pinched and haggard-looking; retention of urine may occur, and death from exhaustion ends the scene.

Diagnosis.—Straining and the passage of mucus and blood in an infant under a year old are almost certainly due to intussusception, and a careful examination of the rectum and abdomen for a tumour should be made. In older children, fever, vomiting, straining, and the passage of bloody mucus indicate dysentery.

Prognosis.—This is always serious, but much will depend on the stage of the attack at which the case is seen, for great importance attaches to early treatment.

Treatment.—Give a warm bath and apply hot fomentations to the abdomen. Begin with a dose of castor oil, with two drops of laudanum in it, and, after this has acted, give a starch enema with five drops of laudanum. American writers advocate irrigation of the rectum and colon with antiseptic solutions, such as mercuric chloride 1 in 10,000, quinine 1 in 5000; or any of the following antiseptics may be used: carbolic acid, boracic acid, salicylic acid, aseptol, thymol, nitrate of silver, sulphocarbolate of zinc, alum, or creolin. Opium after this should be used with great caution, or not at all, and its place taken by ipecacuanha 6 grs. for a child ten years old, in as little fluid as possible. The blindest foods only are allowable, such as light soups thickened with cornflour, or arrowroot, or scalded milk and barley-water, with some saccharated solution of lime. Small bits of ice may be given for the

thirst. For young children under twelve months old, give calomel instead of ipecacuanha.

In all cases a stimulant will be required, and brandy is the best form to give it in.

MUCOUS DISEASE. — Chronic gastro-intestinal-catarrh, when it attacks children past the age of infancy and from three to twelve years old, has received special attention at the hands of Dr. Eustace Smith. He describes it under the name of "Mucous Disease," the following account of which is largely drawn from his work on "The Wasting Diseases of Children," 5th edition.

Definition.—This affection consists of a mucous flux from the whole internal surface of the alimentary tract, which interferes mechanically with the digestion and absorption of the food.

Causes.—The habitual use of indigestible articles of food, such as pastries, and the onset of the second dentition. Certain diseases are apt to leave behind them this condition of bowels, such as measles and scarlatina; but whooping-cough is the one to which this affection can most commonly be traced. There is often marked evidences of deranged nervous action, and Dr. Goodhart is of opinion that the subjects of this disease are the offspring of parents whose nervous systems are feeble or diseased. Wales believes that the primary seat of the disease is in the ganglionic nerves of the intestines.

Symptoms.—The child is languid and dull, is disinclined to exertion, and complains of being tired and depressed; it is irritable and hard to please, drowsy by day, restless and disturbed in its sleep at night with frightful dreams: somnambulism in children is generally due to this cause, and nocturnal incontinence of urine is not infrequent. Many other symptoms pointing to a deranged nervous system may be added, such as irregular muscular tremors, paresis, neuralgia, hyperæsthesia, anæsthesia, syncope, stammering, and squinting.

The *appetite* is capricious, and each meal is followed by flatulent distension and uneasiness. The *tongue* is generally

flabby, and indented at the edges by the teeth. It is glossy and slimy, as if painted over with gum; this slimy look may be confined to a patch on the dorsum, the rest of the surface having a natural aspect, or the whole tongue may be clean, stripped of epithelium, glazed or glossy. The *bowels* are irregular; they may be constipated, or this may alternate with frequent scanty stools, containing large quantities of mucus, which are passed with much straining and prolapse of the bowel. The *breath* is offensive, the complexion is sallow, and flying pains in the head and abdomen are often complained of. The skin soon becomes rough and harsh about the chest, arms, and abdomen, and boils or carbuncles may arise. The thermometer shows no rise of temperature above normal.

Diagnosis.—Tuberculosis is the one disease from which a diagnosis will have to be made. The slimy appearance of the tongue; the large quantities of free mucus in the stools; the history of an attack of whooping-cough, measles, or scarlatina at no distant date; the period of the second dentition; and the normal temperature, are the points to bear in mind.

Treatment.—The first point in treating this affection is the diet, to which the most strict attention must be given. All articles of diet capable of undergoing fermentation must be prohibited, such as farinaceous food, except bread, which may be given in small quantities, stale or well toasted. Potatoes and vegetables, fruit, cakes, and pastry should not be allowed. The meals should be small in quantity, and consist of meat, eggs, or milk; they should be taken at regular intervals, and thorough mastication encouraged. A little dry sherry or claret may be allowed at dinner.

The following diet table is suitable for a child of seven years:—

Breakfast, 8 a.m.—Fresh sweet milk, $\frac{3}{4}$ pint, to which 20 drops of saccharated solution of lime are added; a slice of well-toasted bread and butter; a fresh egg lightly boiled or poached.

Dinner, noon.—A mutton chop without fat, broiled; a little well-boiled cauliflower; well-toasted bread.

Tea, 4 p.m.—Same as breakfast.

Supper, 7 p.m.—A breakfast-cupful of good beef-tea, with a slice of dry toast.

At bedtime a warm bath should be given, and, after careful drying, the body should be rubbed over with warm olive oil. In the morning a sponge bath should be given, with water at a heat of 60° F., followed by vigorous rubbing with a rough towel.

Warm clothing: flannel next the skin, and in addition a flannel binder round the belly is important, and as much of the day as possible should be spent in the open air.

Among medicinal agents many plans of treatment have been suggested. Bicarbonate of sodium 5 grs., iodide of potassium 1 gr., tr. of myrrh ℥ xv., spirit of chloroform ℥ vi., with infusion of calumba to 1 drachm, make a good mixture in these cases, given three times daily before meals.

Aloes is a good remedy, and may be given in teaspoonful doses of the compound decoction three times daily between meals.

Decoction of oak bark in dessert-spoonful doses is often useful.

Some mild preparation of iron may be tried, and I have been in the habit of giving small doses of arsenic with it, as follows: Fowler's solution 1 drop, ferri tartarati gr. v., with chloroform-water to one teaspoonful, three times daily immediately after food. The vinum ferri cit. and the ferri ammonii cit. are also good preparations.

Intestinal antiseptics, such as salol, salicylate of bismuth, resorcin, and liquor hydrarg. perchlor., have all been recommended, and may have a trial.

Irrigation of the stomach and bowels is spoken of in the highest terms by Osler in chronic and obstinate cases: plain water that has been boiled should be used. Dr. Soltau Fenwick sounds a note of warning against stomach-washing, and condemns its indiscriminate use: the cases should be well selected, and children suffering from heart disease or serious

lung trouble should be considered unsuitable for this line of treatment.

Von Ziemssen recommends entaneous electrization of the stomach and intestines with large electrodes, and this may be combined with massage of the whole abdominal surface night and morning. Finally, when improvement is considerable, a change to a bracing seaside resort will be beneficial.

INTESTINAL WORMS.—Varieties.—(1) Thread, (2) round, and (3) tape.

1. **THE SMALL THREAD-WORM** (*Oxyuris vermicularis*) appears like a little bit of white thread, the female measuring from $\frac{1}{4}$ to $\frac{1}{2}$ an inch in length, the male only about a third as large. The colour is white, the shape fusiform and tapering to a fine point in the female, having a blunter and generally curved tail in the male; the mouth is situated in the middle of the blunt end. The eggs are ovoid in shape, being more pointed at one end. They infest the cæcum, colon, sigmoid flexure, and rectum, are extremely fertile, and gain entrance into the system by means of their ova being taken in food or being carried to the mouth on the fingers of the child affected.

Symptoms.—Irritation and itching at the anus, worse in the evenings and at night. Catarrh of the rectum may be set up, which gives rise to straining, with the passage of mucus and blood, and prolapse of the bowel. Vaginitis may be caused in girls, either by the worms getting into the vagina or by the scratching and rubbing they induce. There may be retention or incontinence of urine, as a consequence of the irritation. Itching of the nose, swelling of the upper lip, and dark rings round the eyes are also common symptoms, and Stoll thinks that a frequent dry, troublesome cough is characteristic of worms. The child is usually weakly and anæmic.

Treatment.—Santonin should be given as follows: *santonin* gr. i. with 1 gr. of calomel in a powder should be given for three nights in succession, and followed on the fourth morning by a full dose of castor-oil or other purgative. After the oil has acted, give a large enema, either of infusion of quassia, of

a solution of common salt, or of lime-water, and repeat the enema every night at bedtime for a week if necessary. In female children the injection should be used to the vagina as well, and the outlet smeared with red oxide of mercury ointment; the child should be carefully washed about the genitals with carbolie soap and water after each stool, so as to prevent re-infection, and the finger nails should be kept closely pared. The general health should be attended to, and iron tonics given. The food should be wholesome, and as free as possible from sweets and starches.

2. **THE LONG ROUND-WORM** (*Ascaris lumbricoides*), often called Lumbricus, is from 4 to 12 inches long, of a reddish-white colour, the female being larger than the male. The body is cylindrical, the mouth triangular and armed with about two hundred microscopic teeth. It inhabits the small intestine, but has a peculiar tendency to wander, and so may be found in the stomach, gall-bladder, or large intestine. It has no power of penetrating living tissues. They gain entrance into the system by means of their ova, which are swallowed with food, the covering of the ova being dissolved by the gastric juice, thus letting free the embryos.

Symptoms.—These often resemble those of a mild gastric catarrh, but large numbers of worms may be present in the intestine without producing any disturbance of health, so that the passage of a round worm per rectum is the first thing to call attention to the subject. On the other hand, the high state of nervous tension that exists in the child, and the ease with which reflex phenomena are produced, may readily enough cause a train of symptoms that has been called "worm fever."

Lassitude, colicky pains, picking at the nose, nausea, and depraved or perverted appetite, offensive breath, irregular action of the bowels, which are more often disturbed by night than by day, and disturbed sleep, with grinding of the teeth, are some of the symptoms complained of.

Many cases have been reported that go to show a close connection between the presence of worms in the intestine

and nervous symptoms of a more or less severe kind, such as convulsions, chorea, aphonia, etc., and the fact that the nervous symptom is relieved on the evacuation of the parasite can hardly be ignored.

In rare instances they have caused jaundice by obstructing the bile-duct, or found their way into the peritoneal cavity, and been discharged with the contents of an abscess through the abdominal wall; they may also wander up the œsophagus, and be drawn into the larynx, trachea, or even a bronchus, and cause death by suffocation.

Treatment.—Santonin 1 to 3 grs., with a grain of calomel, should be given at bedtime for a few nights, and a dose of castor-oil the morning after the last powder; $\frac{1}{2}$ to 1 dr. of *mucuna pruriens* in syrup or treacle may be given to a child four years old twice daily. Oil of chenopodium may also be given in 5-drop doses of the oil on lump-sugar three times daily to a child of three, or 10 drops to a child of eight. Oil of turpentine in 2-dr. doses, with an equal quantity of castor-oil, may be given before breakfast as a single dose to a child of four.

3. THE TAPE-WORM is a flat, jointed worm, from ten to twenty feet in length. Several varieties may be met with, the most common being the *Tænia mediocanellata*, or the beef tape-worm. The *Tænia solium*, or pork tape-worm, is also sometimes found, but the *Bothriocephalus latus* is rare. This worm grows in segments from the head by a budding process, and may reach a great length (many yards). It infests the small intestine, to the mucous membrane of which it becomes firmly attached by the suckers and hooks on its head. The source of infection in *tænia* is through eating raw or imperfectly cooked meat, the temperature of which has not been sufficiently raised to kill the cysticerci.

Symptoms.—These are similar to those given under the round worm. Children, like adults, may harbour a tape-worm for years, the only indication of its presence being the passage from time to time of one or more segments per rectum.

Treatment.—Give a dose of castor-oil, and in the morning 20 or 30 drops of the ethereal extract of male fern (freshly prepared) in some mucilage and water before breakfast. At noon give another dose of oil, when the worm will usually be expelled. Another efficient remedy is the tannate of pelletierin, the alkaloid of pomegranate root bark, given in 5 to 10 gr. doses at bedtime, according to the age of the child, and followed in the morning by a full dose of castor-oil. Turpentine may be tried either in one large dose (2 or 3 drs.) or in $\frac{1}{2}$ -dr. doses every six hours; or 1 dr. of pulv. kousso as a single dose for a child of eight years; pulv. kamala (1 dr.) suspended in gruel, syrup, or treacle; 1 oz. of dec. granati rad., or 15 minims of petroleum in gruel as a single dose for a child of six years. These all should be followed after 3 or 4 hours by a dose of castor-oil, and careful search made for the head of the worm. A little starvation for a day or two before giving these remedies will facilitate their action. Unless the head of the worm is expelled, the treatment will require to be repeated.

CHAPTER IV.

DISEASES OF THE DIGESTIVE ORGANS—*continued.*

ACUTE PERITONITIS.—This may occur in the child at any age, and is occasionally seen in the fœtus, when it is usually syphilitic.

Causes.—Blows and falls; exposure to cold and wet; perforation of the intestine by a typhoid ulcer, or of the diaphragm by an empyema; rupture of hydatid cyst; extension of inflammation from a perityphlitis or an appendicitis; from a pleurisy or pericarditis; perforating ulcers of the stomach, ileum, or cæcum; intussusception; tubercle and caseous degeneration of the mesenteric glands, or the bursting of a splenic or hepatic

abscess. In girls purulent vulvo-vaginitis has frequently caused acute peritonitis by extension through the fallopian tubes, and it may also arise as a complication in the acute exanthemata, rheumatism, erysipelas or acute nephritis.

Symptoms.—There is sudden onset of pain in the abdomen, with vomiting; there is diarrhoea at first, as a rule, and afterwards constipation. The abdomen is swollen and tympanitic; tenderness on pressure is very marked about the umbilicus; the decubitus is dorsal, with the legs drawn up, and the breathing is thoracic. The temperature is 102° or 103° F. as a rule, but peritonitis may exist with a normal or sub-normal temperature, especially if it is of the purulent variety. The face is pale, wears a pinched and anxious expression, and the pulse is quick and thready. As the disease progresses, the vomiting becomes less troublesome and may cease, but the tympanitis increases; the tongue is dry and brown, the eyes are sunken, and the pulse is very small and rapid. Death usually takes place towards the end of the first week. Occasionally the case ends in recovery, the symptoms abating and the fluid becoming absorbed. When due to perforation of the bowel, it is usually fatal, and total disappearance of the liver dulness is a sure sign, according to Niemeyer, that peritonitis from perforation has taken place.

Diagnosis.—This is not difficult, the pain, swelling, and tympanitis, with vomiting and fever, and the position on the back, with the legs drawn up, making a characteristic combination of symptoms. In colic there is no duration of pyrexia; the pain is paroxysmal, and there is no tenderness of the abdomen on pressure between the attacks. Pleurisy, especially if it involve the diaphragm, may be mistaken for peritonitis, children frequently referring the pain to the abdomen where the intercostal nerves terminate; in these cases there is no real pain or tenderness to pressure of the abdomen, and the physical signs of pleurisy or pleuro-pneumonia will be present.

In obstruction of the bowels, the pain on pressure is slight; there is no fever; the onset is more sudden; and there is

faecal vomiting. Care should be taken early in the case to exclude the possibility of femoral or inguinal hernia being present.

Morbid Anatomy.—On opening the abdomen, the peritoneum is found covered with recent lymph, and the intestines are matted together. More or less pus may be found in the pelvic cavity.

Prognosis.—This is always very grave. The perforative variety is usually fatal.

Treatment.—Perfect rest in bed, and hot laudanum fomentations to the abdomen with opium internally, are the first essentials. The drug may be given by the mouth, if the stomach will retain it; if retching is severe, give it hypodermically. Two to five drops of laudanum in a teaspoonful of water every three hours for a child two years old; five to eight drops for a child five to ten years old; $\frac{1}{12}$ gr. of morphia hypodermically, for a child five to ten years, can safely be repeated, and in giving opium either way in this disease it is well to produce drowsiness; 2 to 4 grs. of Dover's powder repeated in three hours is also a good remedy. The ice-bag may be tried, but in the majority of cases warm applications, such as turpentine stupes, light linseed poultices sprinkled with laudanum, or smeared over with extract of belladonna and glycerin, are more comforting. Local blood-letting, by the application of from 4 to 12 leeches according to age, is often very useful in the initial stage. Purgatives are to be strictly avoided, except in cases seen at the very beginning, when depletion of the abdominal cavity by means of saline purgatives may be allowed, such as a full dose of calomel followed by a seidlitz powder in plenty of hot water; if the bowels must be opened later on, then small enemata should be used. Thirst should be combated by small pieces of ice to suck; if retching is severe, all food by the mouth must be stopped, and small frequent enemata of beef-tea and brandy given. For excessive tympanitis, turpentine stupes or enemata containing turpentine or assafoetida will be of service; and should these fail, the long rectal tube may be tried, or the distended bowel

punctured with a fine needle through the abdominal wall. The question of surgical interference will arise, and Dr. Starr* says it may be considered proper to operate in the following forms of peritonitis:—

1. In the fulminating forms of the disease, which show a rapid advance of the symptoms, with excessive vomiting and tympanitis, feeble pulse, and great restlessness.

2. In cases in which collapse seems imminent in spite of treatment, and which present a decreasing temperature and a rapid pulse growing feebler.

3. In cases in which pus is present in the abdominal cavity, or in which a tumour is located in, or adjacent to, the abdomen.

4. In cases in which the peritonitis is the result of perforation or ulceration of any of the abdominal viscera.

5. When the peritonitis is due to intestinal obstruction.

CHRONIC OR TUBERCULAR PERITONITIS.—This is a common affection in children, and in the large majority of cases is due to abdominal tubercles. It is not usually seen till after the sixth year, and is very rare in young children. Henoeh reports a chronic case, which was non-tubercular, the result of a blow. The following description refers to the tubercular variety:—

Two forms are described: (1) The Ascitic form, and (2) the Cicatrizing form.

1. **THE ASCITIC FORM** is much the more common. The symptoms begin insidiously, the first thing noticed being that the belly looks large, and next that it is a little tender. The child is dull; looks pale and ill; and avoids all movements which cause a jolt or jar to its body, such as coming downstairs, which it often does backwards on the hands and knees. The abdomen is rounded and distended; there is dulness and fluctuation in the flanks; the skin over the abdomen is shiny, and large blue veins ramify over its surface. Pain and tenderness may be entirely absent, and the swelling and fluid may be present alone. A careful search for tubercles in any

other organ should be made, and inquiry into the family history is important. Hectic fever is usually present, the temperature being 102° or 103° F. at night, falling to 99.5° in the morning. But fever may be entirely absent throughout. The appetite is capricious; the tongue coated; the bowels are irregular; and the child wastes.

2. THE CICATRIZING FORM.—This name is given to those cases in which little or no fluid is present from first to last, but its place is taken by lymph or pus, which covers the peritoneum, parietal and visceral, matting all the organs together. In the suppurative variety, the formation of pus may become encysted in the upper abdominal region, or in the pelvis, in the former giving rise to localized suppurative peritonitis, which points and frequently opens and discharges at the navel: this condition has been called Periumbilical tuberculous abscess. Pain is now usually present, referred to the umbilicus; there is diarrhoea with hectic fever, and enlarged and irregular-shaped masses may be easily felt through the abdominal wall (*tabes mesenterica*). Often the lungs become involved, when there is cough with expectoration of pus, and the child sinks rather rapidly; or the disease may attack the bowels, giving rise to diarrhoea, etc., followed by abscesses, or lardaceous degeneration of the liver, kidneys, or spleen.

Diagnosis.—Ascites is generally tubercular, and if pain, diarrhoea, and hectic are present, it is almost certainly so. The family history will be a help, and the presence of tubercle anywhere else in the body would settle the diagnosis. Cirrhosis of the liver giving rise to ascites is rare in the child: in it the gastro-intestinal symptoms are not so marked, and a slight degree of jaundice is usually present.

Prognosis.—This is always serious, and must be guarded, for, while most cases are decidedly unpromising, a certain proportion recover.

Morbid Anatomy.—Tubercles and lymph are found on the peritoneum, great omentum, and mesentery, matting them all together. Fluid, serous or purulent, will be found, as well

as cheesy mesenteric glands, and often there is tubercular ulceration of the bowels.

Treatment.—Rest in bed, and light easily digested food, are essential. If the pain is troublesome, hot landannm fomentations or belladonna and glycerin may be applied, or the following salve may be smeared over the abdomen night and morning: Hyd. oxidi flav. 20 grs.; lard ℥j. mixed with an equal quantity (℥j.) of ungt. belladonnæ. Tincture of iodine may be painted over the abdomen at bedtime. Enemata and laxatives should be preferred to purgatives, and at night a few drops of Battley's solution may be given to procure rest and sleep. Tonics and cod-liver oil should be given, together with brandy-and-egg mixture. A tablespoonful of cod-liver oil should be rubbed into the front and sides of the abdomen each morning before the fire; a flannel binder is then evenly applied, and over this a piece of mackintosh sheeting: the binder need not be changed oftener than once in ten days. Plenty of sunlight and, when possible, country air or a sojourn at the seaside should be enjoined, and warmth to the abdomen by means of a flannel binder should never be forgotten. If the case becomes very chronic, laparotomy and drainage should be tried, whether the fluid is purulent or serous.

ACUTE OBSTRUCTION OF THE BOWELS.—**Causes.** Intussusception; peritoneal bands; faecal impaction; tumours; or twists of the bowel. By far the most frequent causes are intussusception and appendicitis.

INTUSSUSCEPTION.—**Causes.**—Invagination of the bowel is by far the most frequent cause of mechanical obstruction of the intestine met with in children; it may be caused by drastic purgatives; indigestible food; external injuries, such as a fall out of bed; violent exercise, or rapid up-and-down motion; violent coughing; a polypus or other foreign substance in the rectum that sets up peristaltic action. Rilliet attributes its frequency to the looser connections of the cæcum in the iliae fossa in young children, but the great reflex irritability of the muscular coat and the vigorous

peristalsis so readily set up no doubt contribute towards this frequency. The majority of cases occur in infants under a year, and from four to six months of age is a common time.

Morbid Anatomy.—One portion of the bowel is forced from above downwards into another portion continuous with it. This gives rise to a sausage-shaped tumour, consisting of three layers of gut disposed one over the other. The mesentery is drawn in with the invaginated portion, and presses the included intestine to one side. Congestion of the bowel results, lymph is thrown out, and the opposed surfaces are glued together. Gangrene may take place, the invaginated portion being discharged, after which the opposed edges may unite and the patency of the bowel be restored. In at least three-fourths of the cases it is the last portion of the ileum with the valve that is invaginated into the colon; in the minority it is ileum into ileum or colon into colon.

Symptoms.—These come on very suddenly in the midst of health, with a sharp cry or scream; the child turns pale and vomits; it kicks and tumbles about as if suffering from colic. Soon the bowels are relieved of whatever is below the seat of obstruction, and many are thrown off their guard by this circumstance; this is followed by straining, and nothing now comes away but mucus and blood. Palpation will generally detect a sausage-shaped and painful swelling in the left iliac fossa. There is often a marked depression in the right iliac fossa, caused by the cæcum being dragged over to the left: this is Dance's sign. A careful rectal examination should now be made; and the presence of a rounded tumour, while the withdrawn finger is smeared with blood, would confirm the diagnosis. The temperature is normal or subnormal, unless peritonitis supervenes, when it may be raised a degree or two. The vomiting and straining continue, and soon the pinched look and sunken eyes proclaim the seriousness of the case. Unless relief is at hand, death usually speedily ends the child's sufferings.

Diagnosis.—The sudden onset of severe localized pain, the

vomiting, straining, and passage of mucus and blood, with the presence of a rounded tumour in the rectum or left iliac fossa, make the diagnosis easy.

Prognosis.—This is always very grave.

Treatment.—Put the child under chloroform, and invert the body, at the same time kneading the abdominal walls with the hands; or the child may be shaken up and down in this position. This should only be done when the case is seen at once, and before congestion and adhesions have taken place. A warm bath is often of service, and hot laudanum fomentations should be applied to the abdomen. Injections of water or warm oil into the bowel by means of a fountain syringe should be tried, the quantity injected varying with the age of the child and the position of the intussusception: from one to two pints is a fair average amount, and the reservoir should not be elevated to a greater height than six feet. Inflation by air may be tried, the tumour being manipulated through the abdominal walls at the same time.

If, after a careful trial of any or all of the above methods, the tumour does not disappear, or if, in spite of its disappearance, the symptoms persist, immediate laparotomy should be performed and, if not reducible, the tumour should be resected. If drugs are given at all, the only one should be opium, either by the mouth or subcutaneously. For food, teaspoonfuls of iced milk or small quantities of beef-essence may be given; but everything is usually vomited, until the obstruction is relieved.

TYPHLITIS AND PERITYPHLITIS.—**Causes.**—*Predisposing*: Sex, being much more common in the male than the female; the tubercular diathesis; habitual constipation.

Exciting: The lodgment of hardened feces, pins, fish-bones, cherry-stones, or orange-pips in the cæcum; inflammation of the appendix set up by retained secretion or tubercular disease of its follicles; falls, blows, or strains of the abdominal parietes; the ingestion of indigestible articles of food; the abuse of drastic purgatives or exposure to cold and wet.

Inflammation of the cæcum or appendix may follow, perforation may take place, and a local peritonitis be set up, which leads to abscess, or general peritonitis.

Symptoms.—These are variable and often deceptive, and it may be very difficult to localize pain and tenderness in a young child, in consequence of rigidity of the abdominal walls and fright. The attack frequently begins with vomiting and feverishness, the thermometer indicating 101° to 102° F., and a history of constipation for some days or weeks is the rule; but diarrhoea may be present in many cases. In the course of a few days, during which time the pyrexia continues, more or less resistance to palpation may be detected in the right iliac or lumbar region, or a distinct tumour, which is dull on percussion, may be felt; pain is now complained of, the most tender spot being at a point an inch to an inch and a half from the anterior superior spinous process of the ilium, and in a line drawn from that point to the umbilicus. This tender spot is called "McBurney's point," and corresponds pretty closely to the position of the appendix. The child now lies on its back, with the right leg flexed on the abdomen, and cries with pain on being moved. Under proper treatment the case may go no further, and resolution take place. Often, however, the tenderness increases; a distinct tumour is present in the right iliac fossa, and a local collection of pus is diagnosed. If the abscess is not promptly opened and drained, it will burst, in all probability, either into the bowel, bladder, or vagina, or it may point in the iliac region. A general peritonitis may now be set up.

Diagnosis.—The pain and swelling in the right iliac fossa, the fever and vomiting, with the flexion of the right thigh on the abdomen, are very characteristic symptoms, but in doubtful cases an examination under chloroform with the finger in the rectum should be made.

Treatment.—Perfect rest in bed; the application of a few leeches over the most tender spot, and morphia by the mouth or subcutaneously, will often seem to avert these attacks, and

Treves * says he is convinced of the value of aperients in the earliest stages of these cases. If these measures are not promptly followed by relief, then hot fomentations, with small and frequently repeated doses of opium and belladonna, should be resorted to, and the earliest indication of abscess formation treated by incision and drainage, either just internal to the anterior superior spine of the ilium or in the lumbar region. If a general purulent peritonitis is found to exist, the abdomen should be opened and washed out with warm boracic solution and drained. The diet should be restricted to small quantities of milk and light soups given at frequent intervals, and stimulants will be required in some cases.

ASCITES.—**Causes.**—Chronic peritonitis; cirrhosis and hydatid of the liver; malignant and syphilitic disease of the liver; diseased glands in the hepatic notch, Bright's disease of the kidneys, extreme anæmia, and obstruction to the venous circulation by cardiac or pulmonary disease.

Symptoms.—The abdomen is distended and globular; the umbilicus is prominent, and may be encircled by a plexus of dilated veins termed “the caput medusæ.” Palpation gives fluctuation, and percussion a clear note in front and a dull note in the flanks; the position of the child should be changed from the back on to one side, when the upper flank will now give a clear note where it was dull before. If the amount of fluid is small and confined to the pelvic cavity, its presence may be detected by the finger in the rectum. The temperature is normal throughout, provided no inflammatory disease coexists.

Diagnosis.—In flatulent distension the abdomen is universally tympanitic, and no fluctuation can be detected. A hectic temperature would point to tuberculosis, as would also chronic diarrhoea and cough.

Slight jaundice or bile-pigment in the urine points to portal obstruction.

Prognosis.—This will depend on the cause of the fluid in the abdomen. If the child's health is unimpaired, the temperature

* *British Medical Journal*, March 10, 1891.

normal, the skin natural, and no albumen in the urine, we may give a favourable prognosis.

Treatment.—If the amount of fluid is great, draw it off gradually with a Southey's trocar and canula. The child should have a warm bath every night; its bowels should be kept freely open with pulv. jalapæ co., and Basham's chalybeate diuretic given (see R 14) three times daily. Its clothing should be warm, with flannel next the skin, and the diet nourishing and suited to the digestive powers.

CHRONIC ULCERATION OF THE BOWELS.—There are two varieties, viz. (1) Simple ulceration, and (2) Scrofulous or Tubercular ulceration.

Morbid Anatomy.—The simple ulcer is usually seen in infants, and affects the large intestine chiefly. These ulcers are round or irregular in shape, and vary much in size; their edges are sharply cut; their floor uneven and of a reddish colour. The tubercular ulcer is usually seen in children after the third year, and is generally associated with enlargement of the mesenteric glands and phthisis. The ulcers are usually seen in the small intestine (ileum); their edges are soft, red, and ragged; and their floor red or greyish in colour. In healing they cause contraction of the gut. Chronic peritonitis is frequently present.

Symptoms.—Prolonged diarrhœa, the motions being preceded by colicky pains; tenderness in the abdomen on deep palpation. The motions characteristic of the disease are of two kinds: (*a*) Consists of a reddish-brown water, highly offensive and putrid-smelling; small black spots, which are blood-clots, are seen in the sediment. (*b*) Consists of a pale yellow fluid like cream or thin paste, with an offensive but not putrid smell. Hæmorrhage is seldom copious. The number of motions varies greatly from one to twenty in the twenty-four hours. Wasting is always present, and is in proportion to the severity of the diarrhœa. There is often some fever at night.

Diagnosis.—Simple ulceration is usually seen in babies; tubercular ulceration after the age of three years. Examine

the stools until you are satisfied of the nature of the case. The presence of enlarged mesenteric glands, or chronic lung disease, will be a great help, and the family history should be inquired into.

Prognosis.—Good in simple ulceration; bad in tubercular ulceration.

Treatment.—For a young child, weak veal-tea and barley-water, or whey and cream, is the proper food; yolk of egg beaten up with the veal-tea or barley-water may also be given. All food should be given in small quantities at a time, and wine whey may be given if the child is weak.

For older children, raw pounded beef is almost a specific; a teaspoonful may be spread on toast and eaten, or it may be given with barley-water or whey. As the diarrhœa subsides other things may be gradually allowed; but be careful about milk, and, when you allow it, watch the motions, to see if they contain any curd, and, if they do, stop the milk at once. The brandy-and-egg mixture will be very useful.

For medicines: If the stools are of the homogeneous kind, give nitrate of silver, with dilute nitric acid (see R. 10). When there are reasons for believing that the ulceration is in the colon, such as the appearance of bright blood, tenesmus, etc., gently wash out the lower bowel with a long tube and warm water, and then inject 2 grs. of nitrate of silver dissolved in 4 ozs. of tepid water; if there is much straining, add five or six drops of laudanum.

Any of the following mixtures may be used: R 10, R 11, R 12, R 13.

Convalescence will be favoured by iron and quinine tonics. Both during the illness and for long after, the abdomen should be protected against chill by a pad of wadding and a flannel binder.

PROLAPSUS RECTI.—Prolapse of the rectum consists in a protrusion of a portion of the rectum through the anus, and occurs in three varieties—

1. A portion of mucous membrane protrudes from the anus (partial prolapse).

2. The entire thickness of the walls of the rectum is included in the prolapse (complete prolapse).

3. In addition to the prolapse of the rectum, there is more or less of the bowel invaginated as well.

Causes.—The child is usually in a feeble condition of health, and wanting in tone generally, which give rise to weakness of the sphincter and levator ani, or to relaxation of the rectal walls; phimosis, contracted meatus urinarius, stone in the bladder, cystitis, constipation, diarrhœa, worms, polypus recti, stricture of the rectum, or violent coughing, as in whooping-cough, all may bring it about. The looseness of the attachment of the sub-mucous connective tissues in the walls of the rectum, and the straightness of the coccyx in children, favour its production. Improper diet, or the custom of allowing children to eat at all hours during the day, and thus necessitating frequent calls for the chamber, and the habit, not uncommon, of placing the child upon the chamber and allowing it to spend a large portion of time in this position, are responsible for bringing about prolapse in many cases.

Symptoms.—The characteristic symptom is the protrusion, during defecation, of a reddish mass covered with mucous membrane. The mucous membrane may be nearly natural, but more often it is excoriated and coated over with a thick slimy mucus; it sometimes becomes congested, and may even slough, and small bleedings are common. There is discharge of much mucus, and the child becomes anæmic and loses flesh.

Diagnosis.—This is never a matter of much difficulty, the only doubtful point being to find out how much of the rectal wall is included. Kolsey says that any prolapse over $2\frac{1}{2}$ inches in length contains peritoneum, while the presence of a sulcus will distinguish a rectal intussusception from the second form. Hæmorrhoids are very rare in the child, and never form a complete ring.

Treatment.—Remove the cause of the straining, and keep the child in the recumbent position; the bowels should be kept easily open, and after the prolapse is reduced the buttocks

should be strapped together by means of broad strips of plaster, or a pad and T bandage; the motions should be passed, the child lying on one side, and the sides of the anus should be supported by pressure, or by drawing the skin tightly to one side. Enemata of cold water or solution of tannin, krameria or oak bark decoctions, alum, sulphate of iron, or nitrate of silver, may all be tried: in obstinate cases Allingham applies strong nitric acid, the bowel having been previously cleansed and dried; a pledget of lint well oiled is then introduced into the central depression, and the prolapse reduced. Cripps prefers the actual or thermo-cautery; he draws four lines with the cautery in the long axis of the bowel, one in front, one behind, and one on either side, covers the gut with oiled lint, and returns it quickly. Wedge-shaped strips may be excised from the margins of the anus; the edges of the wounds are then brought together, and the resulting contraction supports the bowel. The general health should receive careful attention, and everything done to bring about a condition of better general tone, such as a change to the seaside, with iron tonics and cod-liver oil, strychnine, and quinine. The child's food should be bland and easily digested, and such articles as tend to produce bulky motions should be avoided. It is most important that the bowels be maintained in such a condition that straining at stool will be unnecessary, and the best laxative is sulphur, of which a teaspoonful of the confection may be given at bedtime, or a teaspoonful of glycerin may be gently injected into the bowel in the morning; finally, cold sponging, the cold hip-bath, or electricity applied to the perineum, may be used.

CHAPTER V.

DISEASES OF THE LIVER.

BEFORE entering on a consideration of the diseases of the liver, it may be well to say that this organ is proportionately larger

in the child than in the adult, and that more of the liver is left uncovered by the ribs in consequence of the greater width of the angle made by the lower ribs with the sternum.

The upper limit of the liver reaches to the fifth space close to the right edge of the sternum, to the upper border of the sixth rib in the nipple line, to the seventh in the axillary line, and to the ninth in the scapular. The edge of the right lobe extends beyond the costal arch in the child while lying down; it never does so normally in the adult.

ICTERUS NEONATORUM.—This is the name given to a slight degree of jaundice met with in infants a day or two after birth. Continental authorities estimate its frequency at sixty to eighty per cent.; it seems to occur much oftener in lying-in hospitals than in private practice; or the difference, perhaps, may be accounted for by many very slight cases being overlooked.

The yellow coloration of the skin is first observed on the second day, or it may be the third, and lasts from two or three days to a week. The jaundice is first noticed on the face, and then on the chest, abdomen, and limbs. In mild cases, the sclerotics are not affected, and the urine does not stain the linen. In more pronounced cases, the sclerotics become yellow, and the urine stains the linen more or less deeply; the motions are not affected, and contain the usual quantity of bile.

Causes.—The cause of this form of jaundice is uncertain, and many theories have been advanced to account for it.

Quinke believes it is due to the ductus venosus remaining patent, and thereby allowing some portal blood, which contains bile pigment, to pass into the general circulation.

Virechow and others believe it to be a hæmatogenous jaundice, the bile pigment originating in a destruction of blood-corpuscles in excess of the powers of the liver to discharge them from the body in the bile.

Kehrer has shown that it occurs more frequently in boys, in premature infants, in the children of primiparæ, and as a consequence of malpresentations.

Ebstein, that it is promoted by atelectasis, and all unfavourable hygienic conditions. The irritation caused by the first food given to the infant, and which is usually of an unsuitable kind, may also give rise to it.

Treatment.—Careful attention to the general health, such as keeping the infant warm, and allowing it nothing but the breast at regular intervals (see Chap. I.), is all that will be necessary in the majority of cases. If the jaundice is pronounced, small doses of hyd. c. eret. may be given for a few nights at bedtime.

CONGENITAL STRICTURE OR OBLITERATION OF THE BILE-DUCTS. — **Symptoms.** — Intense jaundice from birth, which affects the skin, conjunctivæ, mucous membranes, and urine; the motions are pale and completely devoid of bile; hæmorrhages are common from the bowels or into the skin; the liver may be normal in size, smaller, or greatly enlarged. At first (in some cases) nothing abnormal is noticed about the abdomen, but in a day or so the liver begins to enlarge, the spleen enlarges, the baby wastes rapidly, and jaundice, varying in intensity, supervenes. Hæmorrhage from the umbilicus is a frequent symptom; it is of the oozing kind, and the child dies in a few days. Such cases show a tendency to appear in successive children of the same family. If the stricture is not very tight, the child may live for a few months.

Morbid Anatomy.—The internal organs are intensely jaundiced. The liver is enlarged, granular on the surface, and of a dirty-green colour; wasting is extreme; the gall-bladder is small, and contains no bile, and the common and hepatic ducts are shrivelled up, greatly diminished in size, or obliterated. The liver may contain a great excess of fibrous tissue.

The etiology is obscure, but it may be due to syphilis, intra-uterine catarrh of the bile-ducts, or defective development.

Such cases are fatal, and admit of no treatment.

JAUNDICE FROM UMBILICAL PHLEBITIS.—Is due to infection of the navel with a poison similar to that which causes puerperal fever in the mother. Jaundice, in these cases,

comes on a few days after birth, and is well marked. There is high fever, and the abdomen is swollen and tender; bloody pus oozes from the navel, and death is often preceded by convulsions.

CATARRHAL JAUNDICE.—This form is common in children of all ages; it is usually associated with gastrointestinal catarrh, and may occur in an epidemic form.

Causes.—Catarrh of the mucous membrane of the common bile-duct and duodenum; plugging of the duct with inspissated bile; worms in the duct; exposure to cold and wet; phosphorus poisoning; and emotional disturbance, such as fright in nervous children.

Symptoms.—The discoloration of the skin, conjunctivæ, and urine, and the passage of pale-coloured fæces, are preceded for a few days by symptoms of gastric disturbance. The liver is enlarged, and may be tender; but it is rare to find the nausea and vomiting, the low temperature, and slow pulse so usual in the adult. The disease lasts about a week.

Diagnosis.—From acute yellow atrophy, catarrhal jaundice is diagnosed by the absence of brain symptoms and hæmorrhages. Remember that jaundice is not an early symptom in cirrhosis, syphilis, or new growth.

Treatment.—The diet should be light and easily digested, such as soups, milk, etc. The bowels should be kept freely open with small doses of calomel at bedtime for a few nights, to be followed by one of the bitter waters given the first thing in the morning in plenty of hot water: Hunyadi Janos, Franz Joseph, Friedrichshall, or Carlsbad are suitable. During the day a mixture of bicarbonate of sodium with tincture of nuxvomica will be serviceable (see R 15). The phosphate of sodium with infusion of rhubarb makes another good combination (see R 16). Chloride of ammonium is also highly spoken of, and may be given in 5-gr. doses three times daily. *Krull's method* of treating catarrh of the bile-ducts is as follows: one to two quarts of water at a temperature of 59° F. are injected into the bowel two or three times daily, the

temperature being raised at each enema until 72° F. is reached; he says that by this method the catarrh is quickly relieved.

ACUTE YELLOW ATROPHY OF THE LIVER.—This is rarely seen in the child, and when it does occur its symptoms are the same as in the adult. The disease begins with gastrointestinal catarrh, and cerebral troubles (vomiting, delirium, and irregular pupils) are soon added. The uric acid in the urine is replaced by leucin and tyrosin. No treatment seems to have any effect, as it is always fatal.

CIRRHOSIS OF THE LIVER.—There are two varieties: (1) the Atrophic, and (2) the Hypertrophic.

1. ATROPHIC CIRRHOSIS.—**Causes.**—Syphilis is the chief cause, as alcoholism is rarely met with in the child; some think it may arise in the child as the result of intemperance in both parents; contraction or malformation of the bile-ducts; tuberculosis, scarlatina or measles, chronic heart disease, and mediastinitis.

Morbid Anatomy.—There is an abnormal development of new fibroid tissue, which follows the branches of the portal vein. This new tissue after a time contracts, compressing the lobules so that the liver-cells become flattened and atrophied; obstruction to the portal circulation and congestion of the liver result. The organ is somewhat enlarged in the early stage, but afterwards becomes very small, contracted, hard, and granular.

Symptoms.—Indigestion, flatulence, and peevishness precede any special symptoms pointing to the liver; after some time, the complexion becomes sallow or pasty-looking; the bowels are costive, the urine is very acid, and deposits uric acid sand and lithates, or may contain albumen in considerable quantity. Ascites comes on gradually; the abdominal veins are prominent, and palpation reveals an enlarged and tender liver. Slight jaundice is now usually seen, and often there is some puffiness about the ankles. The child may continue in this state for a varying time; but sooner or later the liver

contracts and cannot be felt; the spleen enlarges; hæmorrhages from the stomach and bowels supervene; or the nose and gums may bleed, and purpuric spots appear on the skin. The digestive troubles increase; wasting progresses; bleedings become more frequent; and death takes place from exhaustion. Throughout the illness fever may be absent, but a moderate rise of temperature, 101° or 102° F. in the evening, is seen in many cases.

Diagnosis.—The diagnosis is usually not difficult, and is made from the presence of ascites; enlargement of the spleen; prominent abdominal veins; hæmorrhages; apyrexia; and slight jaundice. Careful search should be made for evidences of syphilis, such as pegged teeth, interstitial keratitis, or scars about the mouth.

Prognosis.—This is always serious, and the occurrence of bleedings from the mucous surfaces points to an early fatal termination.

Treatment.—The earlier symptoms of gastric trouble are to be treated on general principles, but when the more characteristic symptoms appear, it is usual to give an alkali with some bitter infusion (see R 15, 16, or 17). The bowels should be frequently acted on with one of the bitter waters—Carlsbad or Hunyadi Janos. The alkaline mixture should be varied from time to time with iron and quinine, and Basham's chalybeate diuretic is very useful in such cases (see R 14). The ascites should be relieved by drawing off the fluid with a Southey's trocar and canula. A liberal diet should be allowed, given in as easily digested a form as possible. A warm bath every night, and flannel next the skin, are useful adjuncts.

2. HYPERTROPHIC CIRRHOSIS.—**Causes.**—The same as in the Atrophic form.

Symptoms.—The initial symptoms are the same as in the Atrophic form. Jaundice is early and intense; the liver becomes greatly enlarged; the spleen is enlarged in most cases; but there is no dilatation of the superficial abdominal veins,

and no ascites. The symptoms are liable to exacerbations, when there is slight fever, pain in the side, and occasionally the case ends with all the symptoms of malignant jaundice. Bleedings are often present; the tongue gets dry and brown; and the child dies in a state of coma. These two types may be present together, when we find enlarged liver, with ascites and enlargement of the abdominal veins.

Morbid Anatomy.—The liver is enlarged and smooth on the surface. The fibroid overgrowth, instead of following the branches of the portal vein, is now seen around the branches of the bile-ducts. There is little obstruction to the portal circulation, hence the absence of ascites and dilated veins; but there is great interference with the bile-ducts, which accounts for the deep jaundice.

Diagnosis.—The occurrence of enlarged liver with deep jaundice, no pyrexia, and no dilated veins or ascites, should suggest hypertrophic cirrhosis. Acute yellow atrophy comes on suddenly; there is little jaundice, and the liver rapidly becomes diminished in size.

Prognosis.—Very unfavourable.

Treatment.—The same as for Atrophic cirrhosis.

FATTY LIVER.—This disease may be of two kinds: (1) Fatty infiltration, and (2) Fatty degeneration.

Causes.—Overfeeding; phthisis; scrofula; syphilis; rickets; and chronic dysentery.

Morbid Anatomy.—The liver is enlarged; its surface is uniform and smooth; it is doughy and soft to the feel; its section is yellowish, and imparts a greasy look to the knife. By the microscope, granules and globules of fat are seen in the hepatic cells.

Symptoms.—There are digestive troubles and general debility, anæmia, and want of tone. Such children have large abdomens, coated tongues, and pass pasty stools. There is never any jaundice, ascites, or pyrexia. It is rarely seen except as an accompaniment of one of the wasting diseases.

Treatment.—Careful regulation of the diet, together with

small doses of calomel or grey powder, followed by Carlsbad or Hunyadi Janos water, often bring about a great improvement in the condition. Other indications for treatment will be derived from the primary disease.

AMYLOID LIVER. — **Synonyms.** — Albuminoid, Lardaceous, or Waxy liver.

This disease is not uncommon in the child. The spleen and kidneys often suffer at the same time.

Causation.—It is always secondary to some wasting affection, such as chronic suppuration or purulent discharge. Other causes are syphilis, scrofula, and tubercle; and chronic empyema with a fistulous opening, or dilatation of the bronchial tubes, with much purulent secretion.

Symptoms.—Anæmia; digestive disturbances, such as loss of appetite, vomiting, and diarrhoea; the child is languid and easily tired, and its fingers and toes are clubbed. There is no pyrexia. On palpation, the liver is found to project below the ribs; the enlargement is often great; it is uniform; there is no tenderness on pressure, and there is neither pain nor jaundice. There is no compression of the branches of the portal vein; consequently, ascites and enlargement of the superficial abdominal veins are absent, except the glands in the portal fissure become greatly enlarged from amyloid degeneration, when by pressure they may give rise to jaundice, dilatation of the superficial abdominal veins and ascites. As a rule, when the disease in the liver is considerable, albumen will be found in the urine, pointing to similar degeneration of the kidneys. In 50 per cent. of the cases the spleen will be found similarly affected.

Morbid Anatomy.—The liver is uniformly enlarged, heavy, and very dense; its edge is thin and resisting. Iodine stains it of a reddish brown, and sulphuric acid first violet and afterwards blue,

Diagnosis.

Fatty Liver.

Dulness on percusslon reaches to a higher level in front than behind.
 Dulness does not pass abruptly into resonance.
 Dulness is not modified by change in the position of the patient.
 The needle gives negative results.

Pleural Effusion.

Dulness on percusslon reaches to a higher level behind than in front.
 Dulness does pass abruptly into resonance.
 Dulness is modified by change in the position of the patient.
 The needle draws off fluid.

Prognosis.—This is always serious.

Treatment.—Remove any long-standing suppuration or drain upon the system, if possible. Correet diarrhoea and vomiting. The diet should be as nutritious as possible, and stimulants are useful. For the liver itself, iodine is recommended, and iron should be given for the anæmia, which is always present. The remedies may be combined or given separately. Dr. Eustace Smith * gives five drops of the tincture of iodine, freely diluted, before food, and 5 grs. of the exsiccated sulphate of iron in glycerin directly after each meal (for a child of five years). Iodide of potassium with the tartrate of iron is a good combination (see R 18). Warm clothing and plenty of fresh air are important auxiliaries.

HYDATID OF THE LIVER.—This is rare before the sixth year.

Causation.—This affection is caused by the ova of the *Tænia echinococcus* getting into the stomach and intestines, and then to the liver. It is a parasitic worm a sixth of an inch in length, and has four joints. It inhabits the alimentary canal of the dog and wolf; is passed by them with their fæces, and gets into water or other articles of food, by means of which it reaches the human subject.

Symptoms.—The liver becomes greatly enlarged, and a tumour is felt which is painless, smooth, round, and fluctuating. Jaundice and ascites are rarely seen. The spleen is not enlarged, and the kidneys are healthy. There is no fever, and the child seems well in every other respect. If three fingers

* On "Diseases of Children," 3rd edit., p. 733.

are placed on the tumour, and the middle one is struck sharply, a trembling sensation is perceived, which is known as "hydatid fremitus," or "hydatid vibration." The tumour may grow upwards and involve the chest, when there will be lung symptoms; or it may grow inwards towards the fissure, and cause hepatic and portal pressure symptoms (jaundice, ascites, enlarged abdominal veins, etc.).

Occasionally the cyst suppurates, when the symptoms of abscess (hectic fever, shiverings, and pain) will be present. The cyst may burst and discharge its contents into the pleural or peritoneal cavity, setting up inflammation and causing death.

Diagnosis.—The tumour should be aspirated, when the presence of a non-albuminous fluid with hooklets in it would confirm the diagnosis. **Abscess** is negatived by the absence of constitutional symptoms. **Distended gall-bladder** is accompanied by severe biliary colic and jaundice. **Extensive effusion into the right pleura** will give a *concave outline upwards*, the limit of which is lower in the mid-axillary line than behind; hydatid cyst is just the opposite of this—a *convex outline upwards*, and it is highest in the mid-axillary line. If some of the fluid is drawn off, if it is pleural, it will be albuminous and coagulate on boiling; if it is from a hydatid cyst, it will be non-albuminous and remain fluid on boiling. **A soft cancer** would be certain to give rise to constitutional symptoms. It grows quickly; hydatids grow slowly.

Prognosis.—If the case is seen before the cyst bursts, the prognosis is favourable. If the cyst bursts, it is nearly always fatal.

Treatment.—The cyst should be tapped, after which a firm bandage is applied; in the majority of cases it does not fill again. If it does refill, the abdomen should be opened, and the cyst secured to the abdominal wall and drained.

No medicines have any effect on the parasite.

HEPATIC ABSCESS.—This is occasionally seen in the child, and is caused by the absorption of septic matter. The liver is enlarged and very tender, and there is hectic fever. The outlook is very bad.

Exploratory punctures should be made, and, if pus is found, the abscess should be opened and drained under strict anti-septic precautions.

CHAPTER VI.

THE SPECIFIC FEVERS.

MEASLES.—*Synonyms.*—Morbilli, Rubeola.

Definition.—An acute, epidemic, contagious, and infectious disease, characterized by a papular eruption, which generally makes its appearance on the fourth day, being preceded by catarrhal symptoms, and followed by slight desquamation.

Etiology.—Measles is due to a specific poison. It is epidemic, in that it attacks great numbers of children at the same time.

Contagious, in that it is communicated by a visible infecting principle, such as the excretions from the skin, kidneys, and bowels; the nasal and bronchial secretions; the blood and the desquamated epithelium.

Infectious, in that it is communicated by an invisible infecting principle, such as is contained in the breath and blood in the form of micrococci, and which may be carried about on clothes, etc., and thus *infect* others. Second attacks are not uncommon. It is highly probable that measles is infectious during the incubative stage, and it is certainly so from the first appearance of definite symptoms, such as coryza and fever.

Symptoms.—*Incubation.*—Ten to twelve days, during which time the child is not sick. Severe and malignant cases may incubate in a shorter time.

Prodromal Stage, or Stage of Invasion.—This stage lasts about four days, during which time the child suffers from the following catarrhal symptoms: sneezing, bronchial catarrh

running from nose and eyes, and fever. Shining red spots, in the middle of which there are minute bluish-white efflorescences, appear on the mucous membrane of the cheeks, and sometimes on the lips, on the first or second day of the disease, and increase in number up to the time of the skin eruption—these are called Koplik's spots; headache (frontal), loss of appetite, furred tongue, epistaxis, hyperæmia of the roof of the mouth and soft palate, followed by an eruption of small red points, diarrhoea, and vomiting. The temperature at this stage is from 102° to 105° F., pulse quick—120 to 160. Towards the end of this stage the eruption appears.

Eruptive Stage.—The eruption makes its appearance generally on the fourth day of sickness, and consists of minute red points, which soon increase in size and number, becoming distinctly raised or papular and darker in colour, with a marked tendency to coalesce or run together so as to form patches. It is first seen over the forehead, close in at the roots of the hair, and about the ears and over the face; from these points it rapidly spreads over the body and limbs, so as to cover them in twenty-four hours from its first appearance. At this time the appearance of the child is characteristic: the face is flushed, the eyes red and watering, and there is more or less cough. This is the common form of rash; but note the following uncommon forms:—

(1) The eruption, when it first makes its appearance, may take the form of isolated, hard, and prominent papules, giving the shotty feel of early small-pox eruption. Cases of this kind have been mistaken for variola.

(2) The eruption, in some cases, is delayed a day or two, and, when it does come out, may be situated on parts of the body where it is not usually seen, or it may come out in an irregular way, as on the buttocks or limbs. These cases have been described by Rilliet and Barthez under the term *Rougeole anomale*, and are usually associated with some complication as pneumonia or meningitis. I have seen a number of cases of this variety, and have noticed that before the eruption appeared

the symptoms were severe and of a strongly meningeal type; indeed, I have seen cases like this diagnosed tubercular meningitis.

(3) The eruption, in some cases, does not disappear on pressure, as it should do. This is due to minute hæmorrhages into the skin, which delay the disappearance of the spots; it is not otherwise of any serious import.

The fever and catarrhal symptoms remain at their height, or may become intensified, until the rash begins to fade, which it does in from twenty-four to forty-eight hours after its first appearance, when the disease enters the next stage, or—

Stage of Decline.—The eruption now rapidly fades, and is followed by a fine desquamation, especially on the face; the fever subsides, some bronchial catarrh being the last symptom to disappear; the appetite returns, and convalescence is established. This very regular and well-marked course may be departed from; therefore note the following modifications:—

(1) There may be absence of the premonitory and catarrhal symptoms, or they may have been so slight as to have been overlooked. These cases are called **Morbilli sine catarrho**.

(2) The catarrhal and premonitory symptoms may be well marked, but the characteristic eruption may be of the scantiest nature or absent altogether. These cases are called **Morbilli sine exanthemate**.

(3) Cases may occur where evidences of extreme depression are present early in the attack, such as very small, frequent, and feeble pulse; rapid respiration; dry, brown, and thickly furred tongue; very high temperature (106° F.), with cold, clammy extremities; the child is anxious, restless, and somnolent; and there is a marked tendency to convulsions and coma. In many of these cases, the patient is carried off before the eruption has time to appear, or, if it does appear, it is seen to be imperfectly developed, and of a dark-red or violet hue, and the skin generally is thickly spotted with petechiæ. These cases are called **Black or Malignant hæmorrhagic measles**, and are usually fatal.

Complications.—These are numerous, and have been arranged by Hebra as follows:—

Of the Stage of Invasion.—Diarrhœa, or severe vomiting, epistaxis (severe); catarrhal laryngitis (false croup), or laryngismus stridulus.

Of the Stage of Eruption.—Capillary bronchitis; diphtheria; and pneumonia (catarrhal or croupous).

Of the Stage of Decline.—Glandular affections; acute miliary tuberculosis; acute Bright's disease; otitis; cancrum oris; gangrene of the vulva; paralysis; and many eye affections.

Sequelæ.—All the above complications may be reckoned under this head. Whooping-cough is very common soon after measles.

Measles is justly dreaded, in consequence of its strong tendency to kindle any lurking tubercular or serofulous taint, as seen in the frequency with which it is followed by suppuration of glands, or by one or other of the tubercular diseases, and notably acute tuberculosis.

Diagnosis.—1. *From Rötheln, German Measles, or Epidemic Rose Rash.*—In this disease the eruption appears in from twelve to twenty-four hours; it is non-ereseentie in its arrangement; it is lighter in colour, and much less papular. The general symptoms are much milder, especially the catarrh and coryza; and the temperature falls before the rash begins to fade.

2. *From Febris Rubra, or Searlatina.*—In this disease the period of incubation is much shorter—from twenty-four hours to three days; there is marked sore throat; the catarrhal symptoms are very slight or absent; and the eruption is brighter in colour and more uniform. The temperature of searlatina is higher, and the pulse very quick.

3. *From Variola, or Small-pox.*—In this disease the eruption is more raised, is harder, and more resisting to the feel (shotty); catarrhal symptoms are slight or absent; and the temperature is higher. The symptoms abate very much when the rash appears; in measles they increase. If, on stretching a portion of the skin between the fingers and thumb, the papule becomes

impalpable to the touch, the eruption is caused by measles; if the papule is still felt when the skin is drawn out, it is the result of small-pox. This is called the **Grisolle sign**.

From Varicella, or Chicken-pox.—In this disease the catarrhal symptoms are absent, and the general symptoms very mild. The vesicles are conclusive.

From Typhus Fever.—In this disease the catarrhal symptoms are absent; the eruption is darker in colour, and passes through a macular and petechial stage. Measles usually attacks the children first in a household; typhus usually attacks the adults first.

Prognosis.—In estimating the chances of recovery in any given case, take into account the following points:—

(1) The character of the epidemic, as to whether it is a severe or mild type of the disease.

(2) The previous state of health of the patient, and especially constitutional tendencies.

(3) The care and attention the case will receive.

(4) The presence of complications, especially pulmonary.

Treatment.—Isolate the case on the first appearance of catarrhal symptoms; remove all carpets, curtains, etc., and disinfect the room; suspend a sheet over the inside of the door, and keep it moist with a solution of carbolic acid (1 in 40).

Having made these arrangements, let the child be put in bed, and see that there is thorough ventilation without any draughts; let the temperature of the sick-chamber be maintained at 65° F., and the light be subdued by drawing the blinds. Sponge the body every morning, using tepid water coloured with Condy's fluid; wash and dry separately each part of the body, so as to avoid exposure to cold.

Let the diet consist of milk-food and light soups and puddings, and for drink give home-made lemonade, toast-water, barley-water, or plain filtered water. For medicines, give a dose of calomel to begin with, and a diaphoretic with a little paregoric to keep the skin and kidneys acting and to relieve the cough, such as R 19.

Little more than this is required for ordinary cases, but in those of greater severity with scanty or dusky-coloured rash, high temperature, meningeal symptoms, or pneumonia, more active measures are called for. The first indication is to get the skin to act freely, and this is best accomplished by putting the child in a mustard bath (see Appendix) for five minutes, drying it quickly and putting it between warmed blankets; this may be repeated in two hours if necessary. Hot fomentations or poultices to the chest if the lungs are affected, or ice to the shaven scalp for meningitis. Antimony, pot. ant. tart. ($\frac{1}{100}$ to $\frac{1}{10}$ of a grain), or 5-drop doses of the vinum antimoniale, or aconite in drop doses of the tincture every three or four hours may be combined with citrate of potassium 10 grs.; but these powerful remedies must be closely watched in children. Stimulants will be required in these cases in the form of brandy or whisky in half-teaspoonful doses every four hours. Especial care must be exercised during convalescence, and everything done to brace up the system so as to combat any tendency to tubercular or serofulous sequelæ.

A salt-water bath, followed by brisk rubbing, should be given each morning during convalescence; the clothing should be warm, with flannel next the skin; R 20 or R 21 three times daily, and a teaspoonful of cod-liver oil after food in milk will favour convalescence. A visit to a bracing seaside resort will go far to completely restore health.

GERMAN MEASLES.—**Synonyms.**—Rötheln, Epidemic roseola, Rubella.

Definition.—An acute, specific, infectious fever, characterized by the eruption of rose-red spots, which are first seen on the face, and extend rapidly to the limbs and body.

Symptoms.—*Inubation.*—Eight to twenty-five days, during which time there are no symptoms.

Eruptive Stage.—This stage is preceded by slight febrile symptoms, malaise, and poorliness; usually in twenty-four hours the characteristic rose-red rash appears, bearing some resemblance to both scarlatina and measles. It may be seen on

the first day, is most intense on the second, and after this remains visible for three or four days more; by the end of this time it has faded, leaving more or less staining of the skin, and a light branny desquamation follows. The papules are slightly raised, disappear on pressure, and do not group themselves as in measles.

The general symptoms are mild, and there may be little or no rise of temperature. The throat is generally sore and complained of, especially at the time the rash appears, but it subsides in a few days, to reappear after a short interval. This return of the throat trouble is said to be characteristic of r  theln. The superficial lymphatic glands situated along the posterior edge of the sterno-mastoid, or the occipital and sub-maxillary glands are frequently enlarged and tender, so as to give rise to a certain amount of stiffness of the neck, and those in the axilla and inguinal region are occasionally swollen and tender also. R  theln does not protect from measles or scarlatina, nor does either of them protect from it.

Diagnosis.—1. *From Measles.*—By the lower temperature, the non-cresecentic form of the rash, and much shorter eruptive stage.

2. *From Scarlatina.*—By the mildness of the symptoms, and especially the absence of vomiting, the low range of temperature, and the absence of the strawberry tongue; the eruption is rose-red, not dusky-red, and the pulse is not much accelerated.

Treatment.—Keep the child warm and in bed for a day or so; give a dose of calomel or castor-oil, and afterwards a saline diaphoretic every three hours, such as R 19. If debility should remain after the attack, give iron tonics and quinine, and advise change of air.

SCARLATINA.—Synonyms.—Scarlet fever, Scarlet rash, and Febris rubra.

Definition.—An acute epidemic, infectious, and contagious disease, characterized by an eruption, which appears from a few hours after infection to two, three, or even four days: by

sore throat, more or less severe; and by feverish symptoms of varying severity.

Etiology.—Scarlatina is very infectious and contagious, being readily transmitted from one person to another by the exhalations from the body, by the urine, fæces, or discharges from the ear and nose of the patient, but more especially by means of the desquamated epithelium. The nature of the contagion has not yet been determined, but there is reason for believing it to be due to a scarlatinal microbe. The contagion possesses extraordinary tenacity and vitality, and may be carried about in endless ways, such as by clothing, furniture, toys, flowers, letters, all articles of food, domestic animals, etc. From the investigations of Power and Klein, it seems that the fever may be transmitted from cattle to man by means of the milk of cows suffering from a form of bovine fever, and known as “sore teats.”

The patient is less dangerous during the first few days, as a source of infection, than afterwards, and particularly during the period of desquamation. The disease is most common in children between the first and second years, sixty-four per cent. of all cases occurring before the end of the fifth year. It is most prevalent in autumn and in winter. A mild case may give rise to the most virulent type in another person, therefore the necessity of thoroughly isolating every case, even the mildest. It has been noticed that epidemics of scarlatina often follow closely upon epidemics of measles.

Clinical History.—Three forms of scarlatina have been generally accepted—

1. *Scarlatina simplex*, in which the disease runs through its stages without complications or sequelæ, and terminates in complete recovery.

2. *Scarlatina anginosa*, in which the throat suffers severely, and the cervical glands are much enlarged.

3. *Scarlatina maligna*, marked by great and early prostration and typhoid symptoms.

1. **SCARLATINA SIMPLEX.** — Symptoms. — (1) *Stage of*

Incubation.—After exposure to infection, a certain time elapses before the outbreak of symptoms declaring the disease, and this time varies from twenty-four hours to three or four days; it has not been shown ever to exceed seven days. This is important, for *note* that one who has been exposed to infection, and does not sicken *within a week*, may be pronounced safe. Murehison writes in regard to this stage thus :

(a) The duration of the incubation stage may be only a few hours.

(b) In a large proportion of cases it probably does not exceed forty-eight hours.

(c) It very rarely exceeds seven days.

This stage may present no symptoms, or towards its close there may be headache, malaise, lassitude, and loss of appetite.

(2) *Stage of Invasion.*—The attack begins abruptly, *as a rule*, with vomiting, diarrhœa, and sore throat, or a slight convulsion may be added; there is thirst, with furred tongue, red at the tip and edges (strawberry tongue); the pulse is very rapid, 140 or 160, and this extremely rapid pulse is regarded by many as pathognomonic. The skin is hot and dry, the temperature runs up rapidly to 103·5° or 104° F., and the child sits over the fire on account of feeling chilly; the tonsils, soft palate, and uvula are deeply injected; and the glands in the neck are often hard, swollen, and tender at this time. The mucous membrane of the nose and eyelids is seldom or never affected; in other words, there is no coryza, thus giving an important diagnostic symptom from measles.

(3) *Stage of Eruption.*—The rash appears in twenty-four hours from the first symptoms of illness, and first about the neck and shoulders and over the forehead, rapidly extending to the trunk and extremities. "It appears as scarlet points not elevated above the surface; these points are closely set, and their borders, which are paler than the centre, unite so as to produce, when fully developed, the appearance of a pink ground dotted thickly over with scarlet points" (Eustace Smith). Sir Thomas Watson compared the colour to that of

a boiled lobster. When the finger-nail or a pencil is drawn across the reddened surface, a *white line* is developed, which lasts for a few seconds, and is due to the increased contractile power of the superficial arterioles; this white line is called the "*Tache scarlatinale*," and is of considerable diagnostic value: it was first pointed out by Bonchnt. The rash disappears on pressure, and is best seen on the abdomen and inside of the thighs. As a rule, the eruption is general over the whole surface; but a circular space extending from the *alæ nasi* to the chin on either side, and called the circum-oral ring, is nearly always devoid of eruption. Occasionally it is quite patchy, having the spots larger than usual and slightly elevated; in fact, may simulate the eruption of measles. The rash reaches its height on the third or fourth day, by which time there is considerable irritation and some swelling of the skin. Dr. Moore, of Dublin,* says the rash fades gradually, leaving persistent blood-coloured (petechial) lines in the folds in front of the elbows, in the axillæ and popliteal spaces, which lines may be of use for diagnostic purposes. The condition of the throat becomes worse during this stage, and is seen to be *uniformly* red and swollen, with enlarged glands and sometimes ulceration; as a rule, the throat improves with the fading of the eruption. The urine is scanty and high-coloured, and often contains a small quantity of albumen. The temperature rises through both stages until it reaches 104° and quite often 105° F. Towards the end of this eruptive stage, which lasts two or three days, the rash fades, and the temperature returns gradually to normal, when desquamation begins. This process of peeling depends somewhat on the intensity of the rash, beginning earlier in those cases where the eruption has been profuse and accompanied by miliaria, and being delayed in those where the eruption has been slight. The skin begins to fall in fine branny scales over the body, and in coarser scales over the hands and feet; in these latter parts large patches of epidermis may be shed, forming

* "Eruptive and Continued Fevers," p. 163.

gloves of skin, which may even include the nails. Desquamation may occupy a variable time—from ten days to as many weeks—and it ought to be facilitated as much as possible by frequent warm baths, together with scrubbing and oiling. With the completion of desquamation, convalescence is usually established.

The nails are sometimes shed along with the epidermis, but more often their nutrition is interfered with for a time, and they show this by the formation of a transverse groove upon them (atrophic groove). Relapse or recrudescence is rare.

2. SCARLATINA ANGINOSA.—In this form the onset is more severe; the throat is very painful from the beginning, so that swallowing becomes a very real difficulty. Inspection reveals the tonsils swollen, of a deep-red or violet hue, and studded with little white specks of exudation; these are the spots where ulceration takes place, or the spots may extend or coalesce, causing wide destruction of tissue. The glands at the angles of the jaws are much swollen, hard, and tender. The child presents all the symptoms of very grave illness, the face being dusky, and the pulse very small and quick. There are sordes on the teeth and lips; the breath is very offensive; there is a discharge of muco-pus from the nostrils; the tongue is dry and brown; cedema of the glottis may now set in, or a typhoid state may be reached. These anginous cases are very fatal.

3. SCARLATINA MALIGNA.—Of this there are two varieties: (1) Ataxic scarlatina, and (2) Hæmorrhagic scarlatina.

The first variety is ushered in with rigors or convulsions, violent and persistent vomiting; very rapid, small, and running pulse; very high temperature, 106° to 108° F., and higher temperatures have been recorded. If the patient survives the first outbreak, it is only to sink into a state of coma, with dusky face and cold extremities. The rash, if it appears at all, is badly developed and of a dusky colour.

The second variety presents the same severe symptoms, but in addition there is a violet colour of the rash, with points of hæmorrhage freely scattered over the surface of the body;

further hæmorrhages take place from the gums, nose, colon, or urinary passages. Thomas has noted pleuritic and pericardial hæmorrhage in these cases.

Pathology.—Recent experiments point to the existence of an organism peculiar to scarlatina, which has been found in the blood and desquamated epithelium. The changes found after death will vary with the time at which death took place. The blood is dark in colour, and contains excess of white corpuscles. The throat presents œdema, congestion, and ulceration. The cervical glands are enlarged, hyperæmic, and softened, and often there is diffuse cellulitis. The kidneys present the appearance of acute Bright's disease; the heart presents degeneration of its fibres, the result of the hyperpyrexia; and empyema, suppuration into joints, periostitis, or necrosis of bones, cancrum oris, and suppuration in the middle ear, may be added.

Complications.—(1) *In the First Week.*—Diphtheria, diarrhoea, and coryza.

(2) *In the Second Week.*—Bronchitis, pneumonia, rheumatism, and all serous inflammations, such as endocarditis, pericarditis, pleuritis, peritonitis. If pleurisy occurs, the effusion very quickly becomes purulent. The following varying opinions are held regarding the etiology of scarlatinal rheumatism: First, that it is a true rheumatism, occurring quite independently of the scarlatina. Second, that it is a septic arthritis, arising from putrefying matters carried from the throat, ears, or other parts. Third, that it is a further manifestation of the scarlatinal poison, which has fastened on the joints, just as it may and does fasten upon the kidneys or throat.

(3) *In the Third Week.*—In this week the patient is especially liable to kidney mischief, of which two distinct forms are recognized: (a) Septic nephritis and (b) Post-scarlatinal nephritis. The former is seen in severe cases of scarlatina, in which there is marked throat trouble with sloughing tonsils and much glandular enlargement; renal symptoms are often absent, except albuminuria, and the post-mortem reveals a

pyæmic kidney. The latter is announced by the usual signs of scanty, smoky urine; puffy-looking face; swollen eyelids; and general œdema; vomiting and headache are prominent and early symptoms. Otitis, gangrene, or abscesses are also seen at this time.

Diagnosis.—(1) *From Erythema.*—In this disease there is slight fever, no sore throat or swelling of the cervical glands; no kidney affection, and the eruption is absent from the neck and extremities.

(2) *From Small-pox,* which has often at the very beginning an erythematous rash, so as to make the illness look very like scarlatina, and, moreover, the throat may be sore. To guard against mistake here, bear in mind the prevailing epidemic, note the pulse-rate and temperature, examine the throat and cervical glands, and watch the case closely.

(3) *From Measles.*—By the early appearance of the rash; the early sore throat, the strawberry tongue, and glandular swellings of scarlatina; and by the absence of catarrhal symptoms, such as coughing, sneezing, and watering of the nose and eyes.

(4) *From Rötheln, or German Measles.*—By the slow pulse, trilling sore throat, and absence of kidney affection or other complications in rötheln. Remember the prevailing epidemic, and that in rötheln the rash lasts about twelve hours.

(5) *From Erysipelas.*—By the rash being localized and not punctate; by the surface being smooth; and by œdema of the connective tissue; bullæ often occur. In scarlatina, desquamation may occur in places where there has been no eruption; this never occurs in the case of erysipelas.

(6) *From Acute Tonsillitis.*—By the absence of vomiting, rash, and albuminuria; generally speaking, tonsillitis is more marked on one side than the other; in scarlatina both sides are equally affected.

Prognosis.—Always give a guarded opinion, no matter how mild the attack. The mortality is much higher in children under five years.

Treatment.—Isolate promptly, and send the other children away from home, if possible. The following drugs have been used from time to time as prophylactics, but they are of questionable value: belladonna, arsenic, and sulphurous acid. Isolation is the only effectual prophylaxis of scarlatina, but it must be thorough, and kept up until complete desquamation is over. Don't let a child mix with others (go to school, etc.) sooner than two months, and no child should be allowed to mix with others while scarlatina is in its own home.

However mild the symptoms, the child must be kept in bed in a well-ventilated room, and the same measures used as advised in speaking of measles as to disinfection, diet, and drinks. For the heat and irritation of the skin nothing is so soothing and grateful as sponging the surface of the body with tepid water; after the sponging, anoint the body with carbolic oil (1 in 50), and later, when desquamation sets in, the strength of the oil may be doubled (1 in 25).

It is usual, in ordinary cases, to give a diaphoretic, such as R 19, every three hours. Many other lines of treatment are recommended, such as the use of the biniodide of mercury, strongly advocated by Dr. Illingworth, 10 mins. of solution of the perchloride of mercury with $\frac{1}{2}$ gr. of iodide of potassium in a teaspoonful of water every three hours, and Dr. Eustace Smith advises the addition of $\frac{1}{2}$ gr. of chlorate of potassium to each dose. The mineral acids find favour with many, notably the hydrochloric (Swedish method). Dr. Hatfield, of Chicago, strongly advocates the use of chloral hydrate, and claims for it that it relieves restlessness, moderates the angina, and acts as an efficient antiseptic: small doses, frequently repeated, should be used, and the effects carefully watched. Carbonate of ammonium, eucalyptus oil, chlorate of potassium, sulphocarbolate of sodium, sulphurous acid, quinine, and benzoate of ammonium or sodium, have all, in their turn, been vaunted as specifics.

Should the throat present severe symptoms, and the disease assume the anginose form, give ice to suck, and apply hot

linseed poultices or cold compresses to the sides of the neck. Should there be ulceration of the tonsils, many local applications are recommended, such as solution of nitrate of silver 20 grs. to the ℥j. applied three times daily. It will, I think, be found very difficult to paint the painful and swollen tonsils of a young child, and I have derived more benefit in practice from the spray. The following is a good spray in these cases, and may be used frequently :—

R: Glycerin. boracis	3 iv.
Glycerin. acid. carbolici	5 iii.
Aquæ rosæ ad	5 x.
Misce bene	

This may be frequently sprayed into the throat.

Many other substances may be used in this way, as corrosive sublimate (with care), sulphurous acid, iodine, permanganate of potassium, tincture of iron, and chlorate of potassium. A good local application in older children is to paint the throat three times daily with the following :—

R: Glycerin. acid. carbolici.	5 i.
Tr. iodi	3 ii.
Misce.	

as recommended by Ashby and Wright.

In addition, the patient will require increased nourishment and stimulants, such as strong beef-tea and essences (Valentine's), eggs and cream and brandy; and for medicines quinine and iron or carbonate of ammonium.

Treatment of Complications.—*Obstinate vomiting*: Give ice to suck, and nothing else.

Diarrhœa: Give a dose of castor-oil or rhubarb and soda to begin with, and after that chalk mixture or oxide of zinc.

Hyperpyrexia, by antipyrin, antifebrin, or quinine. The cold bath is the best means, and may be used at a temperature of 70° F., and the child kept in it till shivering is produced. Children bear high temperatures well, as a rule, so that you

will do well to be guided, in giving the cold bath, more by the general symptoms than the thermometer.

Rheumatism: Give salicylate of sodium, and wrap the joints in cotton-wool.

Bright's disease you must be always on the look-out for, by examining the urine frequently, and, when you detect albumen in any considerable quantity, proceed at once to treat the disease on general principles (see Bright's Disease).

Even in mild cases the child should be kept in bed between blankets for three weeks from the beginning of his illness, and in his own room for a week longer. When desquamation is completed, a visit to the seaside will do much to restore health, together with iron tonics and cod-liver oil.

In the malignant variety treatment is scarcely ever of any avail, the child dying in a day or two.

SMALL-POX.—*Synonym.*—Variola.

Definition.—An acute, specific, infectious, and contagious disease, characterized by the eruption of a papular rash, which passes through the stages of vesicle, pustule, and scab.

Owing to vaccination, the disease is greatly modified nowadays, and we seldom see in the child a severe form of the affection, but more often what is known as varioloid or modified small-pox. This modified form, however, is as dangerous from an infective point of view as the true disease. One attack, as a rule, protects against a second.

Etiology.—Small-pox is eminently a contagious disease, and thrives, irrespective of soil, wherever its virus is carried, but the season of the year seems to favour an outbreak, it being most commonly noticed in the late autumn and early spring. Cocci have been found in the fresh lymph of human and cow-pox, and in the pustules of true small-pox; they are regarded as the active principle of vaccinia lymph, and have been called the "*Streptococcus variolæ*." The poison may be carried about in various ways, as by the air, on clothes, etc., and the chief stages of infectiousness are those of the earliest period of suppuration, and of desiccation or scabbing, though it must

not be forgotten that the disease is infectious before the eruption comes out.

Symptoms.—*Incubation.*—Nine to fifteen days, or in inoculated cases eight days. There are no symptoms more than a little malaise towards the close of this stage.

Invasion.—Chilliness; fever; vomiting; and severe pains in the head, back, and limbs; thirst; loss of appetite: furred tongue; grinding of the teeth; and quite often convulsions. The violence or otherwise of the symptoms in this stage is not to be looked upon as a forecast of a severe or mild attack. This stage lasts forty-eight hours, during which time the temperature continues to rise. At this time it is quite common for erythematous rashes to appear very like scarlatina, and these rashes are more frequently seen in the modified form of the disease, thus giving rise to much difficulty in the diagnosis; they have been called "*Roseolæ variolosæ*," and Hebra and Trousseau remarked that the parts affected by this rash afterwards remained free from the small-pox rash. Petechiæ may be developed during this stage, and are of bad omen. The invasion lasts three days generally, but it may be as short as two or as long as five.

Stage of eruption begins generally on the third day, in the form of small, red papules, which are first noticed in children on the chin, nose, and forehead, and then quickly spread to the face generally. They are next seen on the wrists, and, after twenty-four hours, spread to the chest, arms, trunk, and lower limbs. In severe cases they appear as soon as the second day; in mild cases as late as the fourth day. The pustules have a tendency to group themselves in threes and fives. The papules feel hard and resistant to the touch (shotty). They are vesicular on the third day of eruption, pustular on the fifth day, and umbilicated when the vesicle is matured; suppuration is reached on the sixth day of eruption and ninth of the disease, when the skin around the pustules is swollen and œdematous. The pustules ripen and enlarge for the next three days, during which time the temperature rises, and the

suffering, from constant smarting pain and itching, is considerable.

Stage of desiccation sets in about the tenth day, and gradually the pustules are seen to dry up, the secretion forming into scabs; the swelling disappears from the intermediate skin, and the features show signs of returning. After this, desquamation sets in, the scabs being thrown off, leaving underneath a white puckered scar. The temperature, having risen steadily until the appearance of the eruption, suddenly falls, and remains normal or sub-febrile for twenty-four hours, when it again begins to rise and continues to do so until maturation is complete. This is called the "secondary" fever, and its intensity varies with the severity of the attack.

Varieties.—*Discrete, or distinct*, in which the pustules are few in number, separate, and distinct.

Confluent, in which the pustules are numerous, and unite the one with the other, or flow together.

Corymbose, in which the pustules are confluent, in patches or clusters.

Malignant, or hæmorrhagic, in which bleeding takes place into the pustules, as well as from the various mucous surfaces; general symptoms are very severe, and the prostration profound.

Complications and Sequelæ.—Boils; abscesses; gangrene; acute cellulitis; otitis; ulcers of the cornea, etc.; erysipelas; pyæmia; pleurisy; pneumonia; bronchitis; peri- and endocarditis; laryngitis; and œdema of the glottis; diarrhœa is common and serious; acute nephritis is also seen.

Diagnosis.—*From Measles.*—(See latter disease.)

From Varicella.—By the following points, taken from Dr. Moore's work on "Fevers:"—

(1) Chicken-pox has often prevailed epidemically without small-pox: varioloid or modified small-pox has never been prevalent without coincident small-pox.

(2) Very young children are attacked with chicken-pox; whereas small-pox usually shows itself in adults.

(3) Vaccinated children readily take chicken-pox; not so small-pox, even in the modified form.

(4) Children who have had chicken-pox may contract small-pox, even soon afterwards.

(5) The two diseases may coexist.

(6) The virus of chicken-pox never gives rise to small-pox; and the converse is equally true.

(7) Chicken-pox is non-inoculable; whereas small-pox is notoriously so.

(8) The eruption of chicken-pox appears in twenty-four hours; that of small-pox not till the third day.

(9) The febrile symptoms continue after the eruption appears in chicken-pox; those of small-pox subside.

(10) In chicken-pox the spots come out in successive crops; this is never seen in small-pox.

(11) The spots in chicken-pox are unilocular, and collapse on being punctured; the spots in small-pox are multilocular, and do not collapse on being punctured.

(12) In chicken-pox the eruption is very irregular, and appears over the body generally; in small-pox it appears in groups of threes and fives, and is always seen on the limbs.

(13) The papule in chicken-pox is soft, and disappears on stretching the skin; in small-pox it is hard and shotty, and does not disappear on stretching the skin.

Prognosis.—Must be guarded, as the mortality is very high up to ten years. Young children usually succumb to even the discrete variety.

Bear in mind the type of the epidemic, and the previous state of the child's health; for weakly children and those of a scrofulous or tubercular diathesis have their chance of recovery lessened. Previous successful vaccination is an important factor, the mortality falling from 50 per cent. in the unvaccinated to 2·3 per cent. in the efficiently vaccinated.

Treatment.—The usual preliminaries detailed in measles and scarlatina are here stringently to be enjoined, such as isolation, disinfection, the preparation of the sick-chamber, etc. Cooling

drinks will be urgently called for, and ice to suck is grateful. For the irritation of the skin, tepid sponging is very soothing, and the bed and body linen should be very frequently changed. Open the bowels with a dose of calomel, and give a diaphoretic (R 19). Insomnia or convulsions call for bromides or chloral, and baths at a temperature of 95° F. are very soothing at this time.

For the more severe varieties the diet should be liberal, and consist of milk, strong beef-tea, yolks of eggs, etc.; stimulants will be required, and the brandy-and-egg mixture supplies a very good form. For the treatment of the eruption with a view to the prevention of pitting, many different methods have been adopted, such as applying carbolic oil 1 in 30; painting with tincture of iodine; cold compresses; glycerin and water, or the glyceride of starch. It is now generally admitted that the pustular stage of small-pox is rendered less severe and the subsequent pitting of the skin less deep by nursing the patient in a red light. This may be readily carried out by hanging the windows with one thickness each of red and yellow photographic calico.

When the pustular stage is reached, give iron and quinine, and as much nourishment as the patient can digest; and at this time the nose, naso-pharynx, and throat should receive careful attention to relieve inflammation and prevent septic absorption by the injection or spraying of some antiseptic solution every two or three hours.

CHICKEN-POX. — **Synonyms.** — Varicella, Waterpock, or Glasspock.

Definition.—An acute, specific, infectious disease, characterized by a short febrile period, and the eruption of clear vesicles over the body, which appear in successive crops, and disappear by desiccation in from three to five days.

It is essentially a disease of children, being most common from six months to five years.

Symptoms.—*Incubation.*—Is usually fourteen days. Towards the end of this period the child is restless and sick.

Invasion.—Child is feverish, restless, and peevish.

Stage of Eruption.—Within the next twenty-four hours the eruption makes its appearance, in the form of small, rosy-red spots, slightly elevated, and which disappear on stretching the skin. These spots become vesicles within the next twelve hours, and are often surrounded by a faint red or pink areola. The vesicle in a day or two bursts and forms a scab, which falls off in a few days, leaving no scar. If the eruption is copious, many of the vesicles abort and shrivel up, and this is especially so in late vesicles. The general symptoms are very mild, and the disease is usually at an end in a week; but occasionally, with the eruption of a large crop of vesicles, rather severe general symptoms present themselves, and the temperature may reach as high as 104° F. Mr. Hutchinson has drawn attention to a variety he has named “Gangrenous varicella.” He says it is not confined to the weak and ill-nourished, but is most common in them. It is associated with the tendency to spontaneous gangrene. The vesicles, instead of drying up, get larger and become black; deep ulcers result, and a dusky blush surrounds them. These cases are very fatal. Dr. Morgan* has drawn attention to a form of chicken-pox, called “Varicella Bullosa.” In a case related by him, interspersed amongst the typical varicellous vesicles were a number of large bullæ. The covering of these bullæ was exceedingly thin, and they came out in crops; fifteen bullæ in all were present, fourteen being on the face, neck, and trunk, and only one on the extremities.

Diagnosis.—Remember the following points about chicken-pox: There is no prodromal fever; no pain in the back; no vomiting; the eruption appears *within twenty-four hours*; the vesicles are clear, not umbilicated, unilocular, and *come out in crops*; they are not shotty to the feel, and disappear on stretching the skin.

Prognosis.—This is always good, except in the gangrenous variety. It is well to remember that chicken-pox seems to

* *British Medical Journal*, Sept. 29, 1894, p. 701.

leave behind it a delicacy of skin, and it is often followed by eczematous or itching skin-eruptions, which are slow in responding to treatment.

Sequelæ.—These are few and of little consequence as a rule, but Eustace Smith has known acute tuberculosis to follow variecella and Henoch acute nephritis. In all fatal cases tubercle has been found.

Treatment.—Little treatment is required, but many give a diaphoretic while there is any pyrexia, and confine the child to bed for a few days. Be watchful that the child does not scratch itself, and sponging with tepid water, and afterwards applying cold cream, will go far to prevent the itching. During convalescence, iron, quinine, and cod-liver oil will hasten recovery, and a change to the seaside will be followed by much benefit.

ENTERIC OR TYPHOID FEVER.—**Definition.**—An acute continued fever due to a specific poison. It is characterized by gastro-intestinal catarrh, fever, varying in duration from fifteen to thirty days, prostration, wasting, and an eruption of rose-coloured spots, which are slightly raised, and disappear on pressure. These spots come out about the eighth or ninth day, and are developed in crops.

Etiology.—*Predisposing Causes.*—Accumulations of decomposing animal matter; individual susceptibility; and early life.

Exciting Cause.—The entrance into the system of the pathogenic germ called the *Bacillus typhosus* by Eberth. The disease is communicated from one to another by means of water, milk, etc.; but there can be little doubt that, through close contact with the patient, the disease may be contracted.

Morbid Anatomy.—Hyperæmia and swelling of the mucous membrane of the small intestine; of the solitary and agminated glands (Peyer's patches); and of the mesenteric glands. In mild cases nothing more serious than this takes place; but in others the swelling increases, and ulceration is the result. The ulcers are elliptical in form, with margins thick and sharply defined, and their long diameter parallel with that of the

intestine; they vary in depth according to the severity of the disease, and may have the muscular coat for their floor, or, in bad cases, the peritoneum. They begin to heal about the end of the third week, and do so without causing any contraction of the bowel.

Symptoms.—*Inebation.*—Seven days to a fortnight.

During the First Week.—Frontal headache; loss of appetite; furred tongue; fever; bowels either confined, relaxed, or irregular, with light-coloured motions; pains in the limbs; restless sleep; epistaxis; and there may be vomiting, and cough due to slight bronchial catarrh.

During the Second Week.—The spleen is enlarged and tender; the abdomen is uniformly swollen and a little tender, especially in the right iliac fossa, with gurgling at this part; usually the bowels are relaxed; but quite as often there is constipation in children. The headache now subsides, and delirium takes its place at night; the expression is dull, decubitus dorsal, with flushed cheeks; and the patient is indifferent to its surroundings, but not in any apparent suffering. Thirst is considerable; the skin dry; temperature variable from 101.5° to 104° F., rising towards evening and falling again in the early morning; but it is necessary to bear in mind that throughout the attack the highest temperature may be registered in the morning (inverted typhoid); the catarrh increases, and the cough gives trouble. About the eighth day the eruption should appear on the abdomen, chest, back, and limbs; but it is altogether absent in a fair number of cases (25 or 30 per cent.); the spots are small, elevated, and of a delicate rose tint, varying in size from half a line to a line and a half, and disappearing under pressure; their number varies, and they come out in successive crops, each spot lasting two or three days. All the symptoms are aggravated during this week.

During the Third Week.—The general symptoms now usually show an improvement, and in mild cases the temperature returns to normal about the fourteenth day. In more severe cases the swelling of the abdomen increases;

deafness is common; the pupils are dilated; and there may be retention of urine; hæmorrhage from the bowel may make its appearance in varying quantity, and add greatly to the gravity of the case; or perforation and general peritonitis may occur, as shown by the disappearance of the liver dulness (Niemeyer).

Relapses are far from uncommon, and are, as a rule, shorter and milder than the primary attack.

Convalescence is tedious, and the patient is enfeebled intellectually as well as physically (West).

Diagnosis.—*From Acute Tuberculosis.*—By the course of the temperature, which is usually intermittent, the diurnal ranges being 3° to 5° : this is never seen in true typhoid. The absence of spots and tympanitis, and the natural size of the spleen in tuberculosis. The expression of the patient in tuberculosis is always one of suffering; and miliary tubercles may be detected in the choroid; a careful examination of the chest should be made in every case.

From Tubercular Meningitis.—By retraction of the abdomen and the doughy feel of the abdominal walls; the slow irregular pulse; and the sighing breathing; the intolerance of light and sound, and, later, by squint, irregularity of the pupils, or ptosis; the temperature may be normal, and is rarely above 101° F. *Note.*—Meningeal symptoms may be strongly marked in the early stage of typhoid.

Acute Gastric Catarrh, in scrofulous subjects, may set in with marked typhoid symptoms; but usually they are more severe than in early typhoid, and subside in a few days; there is no enlargement of the spleen or abdomen.

Simple or Tubercular Ulceration of the Bowels may be mistaken for enterica; but the temperature is less elevated, and there is absence of rose-rash, enlargement of the spleen, and pulmonary catarrh.

The diagnosis may be confirmed by *Widal's test*, which is based upon the fact that living and actively motile typhoid bacilli, if placed in the diluted serum of a patient suffering

from typhoid fever, within a very short time lose their motility and become aggregated into clumps. This clumping is produced by the action of certain antagonistic bodies developed in the blood of the patient and which have a paralyzing or devitalizing action on the typhoid bacilli.

Ehrlich's diazo reaction may also be made use of as follows: two solutions are needed. No. 1, a saturated solution of sulphanic acid in dilute hydrochloric acid (1 in 20); No. 2, a solution of sodium nitrite in water (half per cent. solution). The urine to be tested is put into a test tube, and a quantity of the solutions 1 and 2, equal to that of the urine, is added (about 40 c.c. of No. 1 and 1 c.c. of No. 2). The mixture is well shaken, and then a few drops of liquor ammonia are allowed to flow down the side of the tube. At the junction of the two a deep brownish-red ring appears; if again shaken, the whole fluid mass appears red. This reaction can be obtained in the very large majority of cases of enteric fever, but its diagnostic value is lessened by the fact that it is present in some other febrile conditions (typhus, measles, scarlet fever, pneumonia, and acute tuberculous).

Prognosis.—Is always good in children.

Complications.—Epistaxis; hæmorrhage from the bowels (third week); bronchitis; pneumonia; pyæmia; tuberculous; perforation of the bowel, followed by peritonitis. This last is the one most to be dreaded, and when it occurs it is almost universally fatal.

Treatment.—The nursing of this disease is of the first importance. Give the same directions as in the other fevers, as to isolation, sponging, dieting, and it is important that the patient be put to bed at once. A flannel binder round the abdomen is good practice. Avoid giving solids or farinaceous foods and fruits; the latter have a tendency to ferment and cause acidity. Plenty of good sweet milk and light soups will be sufficient. Remember, if the patient is very thirsty and inclined to drink a large quantity of milk, to dilute it with barley, soda, kali, or plain water. If milk does not seem

to agree well, you can try Benger's or other food, or you may peptonize the milk. When the temperature falls to normal, don't give way to the demands of the patient for something to eat, but continue your fluid diet for seven or ten days, after which small quantities of fish and fowl may be tried, carefully watching the temperature all the time. If any rise should occur, return at once to the fluids. In ordinary and mild cases no medicine is necessary, though a saline diaphoretic for the first week, and hydrochloric acid and quinine during the remainder of the attack, are generally given; and I am of opinion that a few grains of calomel and light magnesia occasionally, during the first week of an attack of typhoid fever, are useful, and may be safely given. Stimulants are not often called for in children.

Hyperpyrexia should be treated with quinine, antipyrin, cold sponging, the cold pack, or the cold bath.

Excessive Diarrhœa, by restricting the fluids and giving some astringent, or starch and opium enemata, or Dover's powder, etc.

Sleeplessness and Delirium, by small doses of nepenthe, chloral, or bromide; cold or tepid sponging; or the cold bath.

Hæmorrhage, by gallic and sulphuric acids; turpentine and opium; ergotin by hypodermic injection, and an ice-bag to the abdomen; restrict the amount of milk given, and substitute strong meat-essences.

Peritonitis will call for full doses of opium, and the abdomen may be smeared with extract of belladonna and glycerin.

Constipation is best treated by enemata of glycerin, or glycerin suppository, or a teaspoonful of castor-oil internally; sometimes a teaspoonful of castor-oil smeared over the abdomen, or applied on a slip of flannel, will act well. Constipation during convalescence is due to atrophy of the muscular fibres of the bowel, and will be best treated by strychnine and the mineral acids.

GLANDULAR FEVER.—**Definition.**—An acute infectious fever, characterized by inflammatory swelling of the deep

cervical and other lymphatic glands, accompanied by constipation, and followed by a considerable degree of anæmia and depression.

Symptoms.—*Incubation.*—This period is about seven days, or from five to ten days.

Invasion.—The onset is sudden, with pain in the neck, which is stiff, pain in swallowing, and sometimes pain in the abdomen. The face is flushed; there is tenderness in the anterior triangle; the tongue is furred; there is anorexia with vomiting, rapid pulse, and a temperature of 101° to 103° F.

There is no sore throat, and nothing to account for pain that is complained of in swallowing. On the second or third day of fever an elongated swelling, due to three or four enlarged glands, is seen beneath and to the front of the sterno-mastoid muscle. In nearly all cases this swelling is first seen *on the left side*; it reaches its maximum in two or three days, and then subsides. The glands on the right side run through a similar course, and other glands, as the posterior-cervical, the inguinal, and the axillary, may likewise become enlarged and tender. Enlargement of the liver, spleen, and mesenteric glands is present in more than half the cases. Obstinate constipation is present in all but the mildest cases. The temperature attains its maximum (104° F.) about the third day, and remains high so long as groups of glands continue to enlarge. Defervescence takes place in the second week, and convalescence is often protracted, the child being left in a depressed and anæmic condition. The disease usually runs a benign course, but the symptoms may be so severe as to suggest typhoid fever. Complications are rare, the most important being nephritis, which may be accompanied with hæmaturia.

The disease was first described by E. Pfeiffer* in 1889, and since by Dawson Williams,† of London.

* "Jahrb. f. Kinderhde.," Band xxix., s. 259.

† "System of Medicine," Allbutt, vol. 2, p. 716 *et seq.*, and in the "Medical Diseases of Infancy and Childhood," 1898, p. 120 *et seq.*

Treatment.—Place the child in bed in a warm room, and give it milk and light soups; small doses of calomel ($\frac{1}{4}$ to $\frac{1}{2}$ gr.) three times daily may be given, and a simple saline mixture, such as acetate of potassium and liq. ammon. acet., prescribed. Hot fomentations to the swollen glands, or belladonna liniment will afford relief. During convalescence, over-fatigue and exposure to cold and wet should be guarded against, and the strength restored by as much nourishing food as can be digested. Cod-liver oil and iron and quinine tonics should be given; and, finally, when all swelling of the glands has disappeared, a change to the seaside or country may be allowed.

CHAPTER VII.

WHOOPIING-COUGH, ETC.

WHOOPIING - COUGH. — **Synonyms.** — Pertussis, Chin-cough.

Definition.—An infectious disease, due to a specific poison, and characterized by malaise, fever, catarrh, and a hard, dry, convulsive cough, which occurs in paroxysms. It is epidemic, and often follows closely on measles.

Etiology.—It occurs in epidemics; is highly infectious and contagious; is very common under two years; less so after ten, but it may be seen at all ages; it does not, as a rule, occur more than once in the same subject.

Incubation.—It is difficult to fix this period with certainty, but it is usually fourteen days. It may, however, be much shorter—two to seven days.

Symptoms.—The disease is marked by three stages: (1) The catarrhal or premonitory stage; (2) the convulsive or spasmodic stage; and (3) the stage of decline or convalescent stage.

1. This stage comes on gradually, with some fever; malaise; restlessness; peevishness; slight cough, *which gets worse towards evening and at night*; and some coryza. All these symptoms get worse, and advice is sought towards the end of this stage.

2. After a variable time the character of the cough changes, the spasmodic, or convulsive, stage is reached, and with it the nature of the disease established; a number of short expiratory puffs are followed by a long inspiration, which constitutes the "caw," or "whoop;" the number of paroxysms in the twenty-four hours is very variable, according to the severity of the attack; and it should be borne in mind that the "whoop" may be absent in infants and in children over eight years. Epistaxis, hernia, prolapse of the bowel, and various paralyses may each and all be caused by the violent fits of coughing, and in the same way the eyes may be congested and swollen, the lips swollen and blue, and the countenance altogether changed during the height of an attack. Often the paroxysm ends with the discharge of a quantity of viscid mucus from the windpipe; in vomiting, or, in severe cases, in general convulsions. The physical signs in the chest will be those of bronchial catarrh, and fever, varying in amount, is mostly present during this stage, especially at night; if pyrexia is continuous, some complication probably exists. The duration of this stage is very variable, according to the state of the child's general health, the nature of its surroundings, and the care in nursing it will receive.

3. There is a gradual fading away of the frequency and violence of the paroxysms. The cough loses its peculiar character; the whoop becomes less frequent; and there is a gradual return to the original catarrhal condition with which it started. Indiscretions in diet, or getting a fresh chill, will very likely light up the complaint again.

Pathology.—The vagus theory is now given up, but for a long time the disease was believed to be due to inflammation of this nerve or pressure on it by enlarged bronchial glands. The

theory most accepted now is that it is caused by a microbe, which has been obtained from the expectoration, and which produces a similar disease in animals. The same microbe was found in the lungs and respiratory mucous membrane of children who died of pertussis, and M. Afanassiew considers it to be the true cause of the disease; he names it the *Bacillus tussis convulsivæ*. It has a local habitation in the respiratory mucous membranes, and by its presence and the products of its activity produces the catarrhal stage of the disease, just as the diphtheria bacillus produces membrane locally and general pyrexia. It is likely that the pertussis microbe also fabricates some virus which, taken into the circulation, acts as an irritant poison to the nervous tissues, especially the respiratory and vagal centres, rendering them far more easily excitable than normal. The catarrhal stage is therefore the period of microbial activity, and the whooping one as due to the after-effects of a poison generated by the microbe.

Meyer-Hüni and Van Herff, who have watched the larynx with a laryngoscope during a paroxysm of coughing, have noted that the catarrhal inflammation is especially marked on the posterior wall of the larynx in the interarytenoid region, the so-called "cough region." In the production of the cough it would seem probable that a small quantity of mucus accumulates upon the surface of the "cough region," and by its presence excites the spasm of coughing.

Complications.—Sub-lingual ulceration; hæmorrhages; vomiting; diarrhoea; pneumonia; bronchitis; emphysema and collapse of the lung; pleurisy; pericarditis; and laryngitis. Collapse of the lung is the most common, and is very serious. Like measles, whooping-cough often develops any latent tubercular or scrofulous taint.

Prognosis.—Bear in mind the following points: Is the epidemic mild or severe? The age of the child, and the care and nursing it will receive; the presence or absence of complications; the number and severity of the paroxysms. The time of the year will also influence the prognosis, the disease being

much more likely to be complicated with chest troubles during the winter than in the summer months.

Convulsions, and bronchitis with collapse of a portion of the lungs, and broncho-pneumonia are the chief things to be dreaded. In the absence of complications, and with proper care and nursing, a child of healthy constitution ought to get better. Rickety children are very bad subjects for whooping-cough.

Treatment.—The first point is to confine the child to as pure an atmosphere as possible. This is best attained as follows:—

Two rooms, preferably on the same landing, are made use of, the one for day and the other for night. The room not in use should be thoroughly disinfected by burning sulphur in it, or by fumigating with carbolic acid or formalin, and after this the windows are left open so that it may be well aired. The fire is lighted one hour before the child is removed into it, the temperature being raised to and maintained at 60° to 65° F. The room vacated should be treated in the same way. The child is confined to these rooms so long as there is any whooping or bronchial catarrh, except in very warm, sunny weather, when a short, quiet walk is often beneficial. The diet should consist of milk, beef-tea, beef essences or jellies, and one or other of these may be given frequently to make up for food vomited; a drink of milk or a cup of beef-tea should be given immediately after a fit of coughing, in the hope that it may have time to be digested and absorbed before the cough returns. The bowels must be kept open, and an occasional laxative is beneficial.

During the catarrhal stage, when there is fever with scanty secretion and a hard, dry cough, give antimony or ipecacuanha in small doses (two drops of the wine of the former or five drops of the wine of the latter) with a saline, such as citrate or acetate of potassium gr. v., and liq. ammon. acet. ℥ xx., every three or four hours. Mustard and linseed poultices may be applied to the chest and hot demulcent drinks given. A little hot gin and water made sweet and given at bedtime often induces sleep.

During the spasmodic stage sedatives will be suitable, such as *phenacetin* (2 grs. every three hours for a child of five), *chloral hydrate* (2 grs. at bedtime), and two similar doses may be given during the day. *Bromoform*, 2 to 4 drops, three or four times daily.

Cocaine hydrochlorate in the following dose:—

6 months	. .	$\frac{1}{16}$ gr.	three times daily, gradually increased to $\frac{1}{12}$.
2 years	. .	$\frac{1}{8}$ gr.	three times daily, gradually increased to $\frac{1}{4}$.
3 $\frac{1}{2}$ "	. .	$\frac{1}{6}$ gr.	gradually increased to $\frac{1}{3}$.
4 $\frac{1}{2}$ "	. .	$\frac{1}{4}$ gr.	" " $\frac{1}{2}$.
6 "	. .	$\frac{1}{3}$ gr.	" " $\frac{2}{3}$.

Glycerin of carbolic acid, 2 drops in a teaspoonful of water every four hours, and watch the urine, lest it affect the kidneys.

Belladonna (5 to 15 drops of the tincture three or four times daily), and increase the frequency rather than the size of the dose.

Cannabis indica ($\frac{1}{4}$ gr. of the extract), or this may with advantage be combined with the preceding.

Lobelia (5 to 10 drops of the tr.) every three or four hours.

Bromides.—These may be given in 5-gr. doses, and are often combined with chloral hydrate.

Opium may be given in the form of *nepenthe* (1 to 5 drops) at bedtime, and twice during the day; or 1 to 3 grs. of Dover's powder at night; or liq. morphine (1 to 3 drops) according to age.

Dr. Eustace Smith* gives zinc sulph. $\frac{1}{6}$ gr. with $\frac{1}{2}$ a minim of liq. atropine three times daily, gradually increasing the salt to $\frac{1}{3}$ gr., and the liq. to 1 m. At the end of this stage he substitutes alum sulph. for the zinc salt in doses of 2 or 3 grs. Peroxide of hydrogen in solution (10 vols. strength) may be given in 3 ss. to 3 i. doses every four hours. The vapour of carbolic acid may be diffused through the room at intervals of a

* On "Diseases of Children," 3rd edit., p. 124 *et seq.*

few hours during this stage, and frequently gives marked relief. Eucalyptus oil (5 to 10 drops on a sponge) may be inhaled five or six times daily. Moncorvo recommends the application of a 2-per-cent. solution of resorein to the larynx ; but it will be much easier to apply it in the form of a spray. A 1-per-cent. solution of cocaine hydrochlorate may be used in the same way. It has long been known that children living in the neighbourhood of gas works suffer less severely than others, therefore the inhalation of coal-gas may be used.

The nasal mucous membrane is often very much affected in whooping-cough, and irrigation of the nasal tract with a saturated solution of boracic acid, or with corrosive sublimate solution, 1 in 5000, may be practised. Iodoform, quinine, boracic acid, biborate of sodium, or tannin have all been used by insufflation.

During the convalescent stage iron and quinine tonics with cod-liver oil should be given.

Change of air will be most useful, but should not be allowed until the child is well over the attack ; it is rarely permissible before six weeks from the commencement of whooping.

All complications are to be carefully watched for, and promptly treated on general principles.

MUMPS.—*Synonyms.*—Parotitis, Cynanche parotidea.

Definition.—A contagious, epidemic inflammation and enlargement of the parotid gland, acute in its origin and course, accompanied by febrile symptoms, and followed in some cases by abscess in the gland, but usually subsiding in a week or ten days, without leaving any trace.

This disease is rare in infants, being most often seen from the fifth year onwards ; it seldom occurs a second time in the same subject ; is usually epidemic, and is most commonly seen in the spring. The virus is contained in the patient's breath, and males are more frequently attacked than females.

Symptoms.—*Incubation.*—Fourteen to twenty-five days.

Invasion.—Langour ; malaise ; loss of appetite ; fever ; shooting pains in the parotid, increased on mastication ; swelling of

the gland, which may extend to the sub-maxillary glands or to the opposite side of the face; the swelling increases for four or five days, and by it the lobule of the ear is drawn outwards and forwards; it then remains stationary for some days, when it begins to subside, and is usually gone in ten or twelve days from the onset; the temperature reaches 103° F. or upwards, and quite often there is great sickness and depression. After subsiding on one side, it may pass to the other, and go through the same course there, or the sub-maxillary glands may be those chiefly implicated in the attack, the parotid getting off comparatively free. Remember the tendency of this disease to subside in the parotid and attack the testicle in boys, or the ovary, vulva, or breast in girls, and this, too, usually on the same side as the parotid affected.

Sequelæ.—Deafness; chronic enlargement of the gland; or suppuration and facial paralysis. The deafness is either catarrhal or nervous, the former passing off in a short time; the latter permanent and beyond remedy.

Prognosis.—Good. Atrophy of the gland may follow a severe attack.

Treatment.—Confine to bed while the temperature is raised; give a dose of calomel, followed by a diaphoretic (R 19) every three hours. Locally warm applications are best, as poppy-heads, or linseed, or spongio piline. Glycerin and extract of belladonna may be smeared over the parotid, and if the pain is severe, a 20-per-cent. solution of cocaine may be painted on. Give plenty of milk, beef-tea, and custard, and, should metastasis occur, treat in the same way.

DIPHTHERIA.—**Definition.**—An acute, contagious, and infectious disease, which induces great anæmia and prostration; it is characterized by inflammation of various mucous surfaces, and the formation on them of a more or less tough, leathery, false membrane.

Etiology.—*Predisposing Causes.*—Childhood from twelve months to five or six years; certain constitutional peculiarities, as delicacy of throat, etc.; the scrofulous diathesis:

cold and moisture; and the effluvium from foul sewers or cesspools.

Exciting Causes.—Contagion, which may be carried about on clothes, etc., drawn into the lungs with the air, or swallowed in contaminated articles of food, water, milk, etc.; imperfect sewerage, filth, and bad drainage are also frequent causes. The membranous exudation is highly contagious; it is of a whitish-grey colour, yellow in some types, and black or brown in the malignant form. The Klebs-Löffler bacilli are present in large numbers in the false membrane and exudations taken from the throat; they remain local, and do not enter the blood, like those of anthrax. It is highly probable that during the growth of these bacilli a ferment is produced which is capable of digesting proteids, certain albumoses being formed, which act in turn as virulent poisons on the system. These albumoses are formed locally, and are then absorbed into the blood. The paralysis following diphtheria is the result of degeneration of the peripheral nerves, caused by the albumoses; it is a multiple neuritis.

Symptoms.—*Incubation.*—May vary from a few hours to seven or eight days. It is usually two days, and seldom exceeds four. Cases may be divided into the mild, severe, and malignant forms.

Mild Form.—The child complains of sore throat, or, if very young, refuses to swallow; temperature, 102° to 103° F.; frontal headache; is languid and out of spirits; there is generally some pallor. On examining the throat the fauces are red and swollen; the uvula is enlarged; and on one or both tonsils a grey, tough-looking patch will be seen, usually occupying the anterior aspect. This patch may be a continuous layer, or may be composed of spots of false membrane scattered over the surface; but these spots soon coalesce. The glands at the angles of the jaws are enlarged and tender in many cases, and in the majority albumen is present in the urine before the end of the first week.

The temperature often falls in three or four days in this

form; the appetite returns; the membrane disappears, and so also do the bacilli. But it is most important to remember the fact pointed out by Löffler, that virulent diphtheria bacilli may be found in the fauces and mouth of patients during the first month after the membrane has disappeared. The child seems but little the worse for its attack; but even in these mild cases after ill-consequences may follow.

Severe Form.—The membrane spreads widely over the pharynx and to the nose, which is always a sign of virulence, there is severe constitutional disturbance; or the disease may travel to the larynx, and place the child at once in serious danger. In this form there is frontal headache; swallowing is very painful; the face is pale and distressed; the fever seldom rises above 103° , indeed the slighter forms are more febrile than the severer forms, and in very bad or malignant cases there may be a subnormal temperature. Vomiting may occur at each effort to swallow, and the false membrane is thick, tough, and very coherent; the breath is offensive, and a thin foetid discharge escapes from the nostrils; the swelling and tenderness of the glands are very great; hæmorrhages may take place from the mucous surfaces; and the prostration is marked. Albuminuria occurs in about two-thirds of all cases, and the amount of albumen present is a fair indication of the severity of the attack. It usually appears on the third or fourth day, but in severe cases it may appear in twenty-four hours.

Malignant Form.—This shows itself very soon in the attack by severe constitutional symptoms; pulse very small and feeble; eyes sunken and the complexion jaundiced; epistaxis and other hæmorrhages or extensive eruptions of purpura are common; the cervical glands and cellular tissue swell to a great extent; the prostration is complete; and the child dies in a low muttering delirium. The temperature often is subnormal.

Complications. — Albuminuria; Pneumonia; pericarditis; endocarditis; and sudden cardiac failure. This latter is apt to

arise on the slightest exertion; it is most commonly met with towards the end of the attack, and may follow the mildest case.

Sequelæ.—Albuminuria; extreme anæmia; heart disease; and multiple neuritis. The nervous lesion is the most important, and follows in about one-tenth of all cases. It usually first attacks the muscles of the soft palate and pharynx, giving a nasal tone to the voice, and a tendency to regurgitation of fluid through the nose in swallowing; from these it may extend to any or all of the muscles of the body in rotation, the implication of the heart and respiratory muscles being most to be dreaded. The tendon reflexes are lost as a rule, but I cannot confirm the statement made by Strumpell, that “the tendon reflexes are lost in cases of true diphtheria even though there be no paralysis present.” The slightest cases of diphtheria may be followed by multiple neuritis, and *per contra*, the most severe forms of the disease may escape: it may set in at any time from the fourth day to the tenth week, the mean interval being three or four weeks. In rare cases the paralysis attacks the cardiac and respiratory muscles first, as in the following. A.B., aged three years and three months, was admitted into the Children’s Hospital, Queen Street, Belfast, on the 19th of April, 1898, with pharyngeal and laryngeal diphtheria. Tracheotomy was performed, and antitoxin injected. He made a good recovery, and everything progressed well until the 3rd of May, when his pulse was noticed to be slow. On the 5th the first sound at the apex intermitted 1 in 6; 6th, pulse more irregular and weaker; 7th, pulse better to-day, and cardiac action improved; 9th, the heart much better, and pulse 70, regular; deficient accommodation for near objects, and a slight tendency to squint in right eye; 10th, heart nearly quite recovered, muscles of respiration now involved, and chiefly the diaphragm; 11th, diaphragm greatly involved, breathing thoracic; had two spasms of dyspnoea. From this time until his death on the 17th, the respiratory muscles became more and more involved; strychnine hypodermically, stimulants,

and electricity seemed to afford him only very temporary relief.

Diagnosis.—The tough-looking grey membrane in the throat, the redness and swelling of the fauces, and the enlarged cervical glands are characteristic. The presence of albumen in the urine would support the diagnosis, which should be confirmed by bacteriological examination.

Prognosis.—Must always be guarded, no matter how mild the case. Bear in mind the following points: The nature of the prevailing epidemic; the age, for the younger the child the less chance there is of recovery; the condition of the heart, and the presence or absence of paralysis.

Treatment.—Isolate and disinfect, as for the exanthemata. Put the child to bed; and remember that, as this is a markedly asthenic disease, its nourishment must be carefully looked after, and be of an easily digested and supporting kind. The further treatment may be divided into local and general.

Local.—In the use of these remedies we try to fulfil three indications: (1) To arrest the spread of the membrane; (2) to promote its removal; and (3) to prevent septicæmia.

1. To arrest the spread of the false membrane, many caustics have been rubbed in or painted on, such as nitrate of silver, strong hydrochloric acid, tincture of the perchloride of iron: but this method has passed into disuse nowadays, and given place to the next.

2. To promote the removal of the false membrane, pepsin and papain may be dusted on. Lactic acid and lime-water may be applied, either as a spray or gargle, in the proportion of one part of the acid to eight parts of lime-water; carbolic acid 20 drops, and lime-water $\frac{3}{4}$ j. is another form of gargle or spray; liq. potassæ 20 drops to the $\frac{3}{4}$ j. of water; boracic acid 30 grs. to the $\frac{3}{4}$ j. of water; benzoate of sodium $\frac{3}{4}$ j. to the $\frac{3}{4}$ j. of water, are all excellent. *Peroxide of hydrogen*, 10 vol. solution diluted with lime-water is the most effectual, but it irritates, and its use should be followed by irrigation with a saturated solution of borax in hot water. It is best used with a

fountain syringe, and about half a pint injected each time. *Sulphite of magnesium* may be dusted on every 3 hours, or a gargle may be made of $\bar{3}$ iv. to $\bar{3}$ viij. of water, and used every hour. Sulphur may be used in a similar way, or calomel may be used by fumigation. Ashby and Wright paint the throat with glycerin, *acidi carbolici* one part and tr. *iodi* two parts. Many other antiseptic powders or solutions might be added, but these will be found as good as any.

3. To prevent septicæmia from absorption of putrid matters from the throat, it will be necessary to keep the throat as free as possible from discharges.

Lœffler advocates the following :—

R̄ :	Corrosive sublimate	.	.	.	.	gr. j.
	Aq. rosæ ad	.	.	.	.	$\bar{3}$ viii.
						Misce.

This may be sprayed into the throat frequently. Or—

R̄ :	Corrosive sublimate	.	.	.	.	gr. ii.
	Glycerin ad	.	.	.	.	$\bar{3}$ j.
						Misce.

may be brushed over the membrane occasionally. Carbolic acid $\bar{3}$ j. in $\bar{3}$ x. of rose-water makes a useful spray or gargle. In consequence of the persistence of the bacilli in the fauces and mouth, it is necessary to continue the spray or gargle for a month or six weeks after the false membrane has disappeared. When the nostrils are affected, they must be syringed out frequently with the carbolic acid solution, in addition to three times daily with the corrosive solution.

General.—Strong beef-tea, beef-essences (Valentine's), eggs, milk, stimulants as brandy and champagne; keep a careful watch on the strength in this very depressing disease.

Give tincture of the perchloride of iron freely in glycerin, or you may combine the liq. hyd. perchlor. with it; iodide of potassium 1 gr. with 10 drops of liq. hyd. perchlor. is used by many. With the advent of any signs of cardiac failure,

strychnine and digitalis with ammon. carb. should be given, and the amount of stimulant increased, and in desperate cases the hypodermic use of strychnine $\frac{1}{60}$ gr. may be resorted to.

Within the last few years all our former methods of treating this disease have been to a large extent, if not entirely, replaced by the injection of the diphtheria antitoxin, which we owe to the investigations of Behring and Roux. The serum has had a fair trial and the results have been most gratifying, so that it now takes a permanent and important place in the treatment of all kinds of diphtheria. It is injected with a special syringe for the purpose, under the skin of the abdomen or between the scapulae, and a large initial dose should be used in preference to smaller ones frequently repeated. For children under two years, and in mild cases over that age, the first dose should be 1000 units; in severe cases, 1500 to 2000 units. It is absorbed quickly, and generally produces a change for the better in the patient in 24 hours; its injection is followed occasionally by fleeting erythema. If no improvement is manifest in 24 to 36 hours, then a further full dose should be used. Strict antiseptic precautions should be followed, the syringe being first boiled in a sterilizer for a few minutes, and the site of injection made "*surgically aseptic.*"

LARYNGEAL DIPHTHERIA, OR TRUE CROUP.—

When diphtheria attacks the larynx, the child is at once in serious danger. As a rule, it is due to the extension of the disease from the pharynx.

Symptoms.—The extension to the air-passages takes place suddenly, and is announced by stridulous breathing; hard, harsh, clanging cough; hoarse voice; difficult breathing; or there may be attacks of dyspnoea, with livid face; the mouth is kept open; and the expression is one of great anxiety. The stridor affects both inspiration and expiration, and the cough gradually becomes hoarse and whispering. The increased efforts to get breath cause a drawing-in of the lower portion of the sternum and ribs. The dyspnoea occurs in frequent attacks, varying from five to fifteen minutes in duration, and each

attack is more severe than the former, so that gradually the child passes into a semi-asphyxiated state, with feeble pulse, rapid breathing, clammy and cold perspirations. The hands are carried to the larynx, and the child makes efforts as if to remove from thence some obstruction. Unless the obstruction in the larynx be relieved promptly by tracheotomy, the child passes from drowsiness to stupor, and sinks quietly or in a last struggle for breath. The temperature is not high—in fact is often normal in these cases, and as symptoms of the virulent kind due to poisoning of the blood do not occur, paralysis rarely or never follows.

Prognosis.—If the antitoxin is injected promptly and the obstruction relieved by tracheotomy, recovery may be looked for in the large majority of cases.

Treatment.—The same indications as in the pharyngeal variety as to nourishment, isolation, etc., must be followed. The antitoxin should be used at once, and the earlier it is resorted to the better chance the child will have of recovery. The same directions as given before are to be followed. It is usual to have carbolic acid vaporized in the room in these cases, or the child may be made to inhale one teaspoonful of the following: Acid. carbolici, $\bar{3}$ iv.; ol. eucalypti, $\bar{5}$ i.; spt. terebinth, $\bar{3}$ iv.; mixed in a quart of boiling water frequently.

ERYSIPELAS.—Is an acute, specific, and contagious disease characterized by a peculiar spreading inflammation of the skin, due to a specific micro-organism and associated with general febrile symptoms.

Causes.—*In babies* it is most commonly seen after vaccination, but it may follow a wound of the skin however slight, burns, or the application of blisters, or arise during the progress of skin eruptions; formerly it was not uncommon in lying-in hospitals before antiseptic precautions were adopted.

In older children it arises from some slight wound becoming infected with the bacillus. The contagious principle is the *streptococcus erysipelatis* of Fehleisen, which may be found in the lymphatic vessels and spaces of the skin and subcutaneous

cellular tissue; it occurs as a single cell or in the form of diplococci, or in chains of varying length.

Symptoms.—These often set in with convulsions in children, vomiting, and high temperature, 104° ; the pulse is quick, and in a few hours the characteristic red blush of erysipelas shows itself; it may be at the site of a recent vaccination, round the navel in infants, or on the face in older children. There is great depression of the vital powers, so that infants are carried off rapidly; in the facial variety suppurative inflammation of the orbital connective tissue is to be dreaded, as it is frequently fatal from extension to the cerebral meninges through the optic foramen or sphenoidal fissure. Serous inflammations are common, and so also is pneumonia. In some cases it assumes a wandering form, spreading from place to place. In these the symptoms are milder, and recovery may take place after many weeks. Albuminuria is not uncommon.

Treatment.—The patient should be isolated as soon as possible, and especially must it be kept away from other children who are suffering from wounds however slight, burns, or skin eruptions. The part affected should be thickly dusted with equal parts of powdered oxide of zinc and boric acid, and then covered with cotton-wool. The strength should be maintained with suitable nourishment and stimulants given. Iron in the form of the tincture of the perchloride in full doses every four hours is still the favourite drug in this affection. *Da Costa* advocates the use of jaborandi, but it requires great care in children. He gives a full dose of pilocarpine sufficient to produce a pronounced sweat, and keeps up the effect afterwards with the fluid extract of jaborandi given every four hours in suitable doses. Recently antistreptococcic serum has been tried in this disease, injected in the same way as antidiphtheritic serum, and with varying results.

CHAPTER VIII.

DISEASES OF THE RESPIRATORY ORGANS.

COLLAPSE OF THE LUNG.—Synonyms.—*Atalectasis pulmonum*, *Apneumotosis*, or *Fœtal condition of the lung*.

Definition.—A condition in which the alveoli of the lungs have not become filled with air at birth, but remain empty and collapsed. This is called *Congenital atalectasis*.

Another form is that in which, after the respiratory function has become established, a portion of one or both lungs becomes collapsed as a consequence of disease. This is called *Post-natal atalectasis*.

1. CONGENITAL ATALECTASIS.—Causes.—Premature birth; feeble condition of the child itself, or of the mother; separation of the placenta; tedious labour, producing long compression of the cord; frequent and violent contractions of the uterus, which arrest the circulation in the placenta; and the presence of mucus, blood, or other fluid in the air-tubes.

Morbid Anatomy.—A collapsed lung is airless, shrunken, and depressed below the ribs; does not crepitate, and feels tough and resistant, like liver substance; as it is devoid of air, it sinks in water.

Symptoms.—The child makes only faint efforts at breathing; its skin feels cold, and a thermometer in the rectum marks 97° F.; the fingers and toes are blue-coloured, and the ery is faint; it is unable to suck; the pulse is hardly perceptible, and the fontanelle is deeply depressed.

Auscultation reveals little air entering the chest, and at the bases and along the borders of the lungs vesicular sounds may be entirely absent.

Percussion will give some dullness at the bases and along the borders of the lungs close to the spine.

Cases of this severity live but a few hours, but many others, not so extensive, may, by energetic treatment, recover.

Treatment.—Artificial respiration; the warm bath; rubbing the back with whisky; dashing cold water on the chest, are the means used when the child is born apparently lifeless. It is very necessary that the child be kept warm; therefore keep it in a warm room, and roll it in cotton-wool. If unable to suckle, it must be spoon-fed, and it should get five drops of brandy in a spoonful of warm milk every hour. Stimulating liniments and the mustard bath are also serviceable, and the inhalation of oxygen may be tried.

2. POST-NATAL ATALECTASIS. — **Causes.** — Pulmonary catarrh; premature birth; vomiting; diarrhoea; insanitary conditions; and improper feeding, all predispose to this condition; interference with the descent of the diaphragm by ascites; flatulence; or increase in the size of the abdominal organs; softening of the chest-walls, as in rickets; measles, pertussis, pleural and pericardial effusions; diphtheria; laryngitis stridulosa; abscesses in the vicinity of the larynx, all are capable of producing atelectasis.

Symptoms.—These vary according to the amount of lung tissue collapsed. The impaction of a large plug of mucus in a bronchus will give rise to severe symptoms, such as sudden lividity, want of breath, and convulsions; but these severe cases are rare. What we most often see is that, during the course of a mild catarrh, the child suddenly becomes livid, or very pale; breathes quicker, and is very restless; its cough almost ceases, *and its temperature falls below normal*; its features are pinched; its eyes hollow and dull; cold sweats break out; and percussion at the bases and along the posterior borders of the lungs gives a dull note in most cases, but dulness may be very slight or entirely absent if there is any emphysema present. To detect dulness, percuss lightly with two fingers on two fingers, instead of with one. Auscultation reveals bronchial breathing, crepitation close to the collapse, and absence or great diminution of vocal resonance.

Diagnosis.—Remember the following points: In the course of an ordinary catarrh you have the sudden onset of restlessness and distressed countenance; cough ceases; the complexion becomes livid; the nares act; the eyes become hollow; breathing is hurried and shallow, and the temperature falls below normal. This last point is most important as diagnosing collapse from pneumonia, in which you would have the temperature elevated. Plenrisy with effusion often gives rise to but few symptoms; in fact, in the child it is frequently latent.

Prognosis.—Bad, especially in rickety and weakly children, and when it comes on in the course of bronchitis.

Treatment.—Put the child at once in a hot mustard bath (one ounce of mustard to the gallon of water), and keep it in the bath till the nurse's arm or hand tingles. Dry carefully and roll it in cotton-wool. Give a smart emetic of sulphate of copper, by dissolving 2 grs. in an ounce of water, and giving a teaspoonful every five minutes till free vomiting is produced. Apply to the chest a stimulating liniment, as Stokes's, and give a stimulating expectorant, as R 22. Atropine sulphate is a respiratory stimulant, and may be tried in $\frac{1}{300}$ to $\frac{1}{200}$ of a gr. hypodermically. Oxygen or hydrogen gas may be inhaled.

Be careful that the child gets sufficient nourishment, and let it have five drops of brandy, in milk, every hour. Do not allow the child to sleep longer than one hour at a time, but have it awakened for nourishment, and let it be encouraged to breathe deeply.

BRONCHITIS.—This is a common and fatal affection in children, chiefly from its tendency to run into bronchopneumonia. When confined to the larger tubes, it is not serious; but there is always the danger of its spreading to the smaller tubes (capillary bronchitis), when it becomes very serious indeed.

Causes.—Exposure to cold and wet, innutrition, and obstructive heart diseases, enlarged bronchial glands, and the

inhalation of irritating particles or gases, and dentition. It may be secondary to whooping-cough, measles, typhoid, scarlatina, diphtheria, small-pox, heart and kidney diseases.

Symptoms.—These begin with coryza, sneezing, and hard dry cough; in a few days the cough becomes loose, and is followed by the discharge of mucus; the temperature is rarely much above 100° F. in these mild cases, except at bedtime; the bowels are confined; and the tongue coated. Auscultation reveals sibilant râles, and very large, moist crepitations, chiefly heard in the front of the chest below the clavicles.

If the affection assumes a more serious type, or spreads to the small tubes, you will have a temperature of 103° F. or so, and the cough, which is frequent, gives rise to considerable pain of a tearing nature behind the sternum; the child is restless and irritable; there is much thirst, and a good deal of gastro-intestinal catarrh; there is now considerable dyspnoea, with pinched features, and a look of distress; the face is pale, and the lips livid; pulse is very rapid, 130 to 150: clammy sweats break out; the tongue is furred, and the appetite gone. If old enough, the child coughs up a yellowish and tenacious phlegm; if very young, the child swallows this. Percussion gives negative signs. Auscultation gives subcrepitant rhonchi in abundance *over both lungs equally*. These are very serious cases.

A chronic form of bronchitis is common, and is usually seen in scrofulous children. It often follows on measles and whooping-cough. It varies with changes in the weather, and disappears entirely during the summer months. A worse form is that which is associated with a good deal of emphysema, the chest becoming barrel-shaped, the skin dry, and the finger-tips clubbed; the face is livid and puffy-looking, and such subjects cannot engage in stirring games. It is quite usual in these cases to have chronic disturbance of the stomach and bowels, and sometimes the two seem to alternate, the one improving while the other gets worse. In all forms of bronchitis, but especially in the chronic form, the bronchial

glands are enlarged, and there is always the fear that they may eventually become caseous.

Diagnosis.—*From Collapse.*—Bear in mind the dulness on percussion and sub-normal temperature in collapse.

From Broncho-pneumonia.—By the higher temperature and loss of the pulse-respiration ratio of this disease. The cough of pneumonia is short and hacking; that of bronchitis, loose and thick, and often paroxysmal.

Prognosis.—Serious in young and rickety children, from the danger of collapse of the lung supervening.

Good in healthy children after the second year.

Serious in the capillary variety, even in strong healthy children, and very much worse in the rickety and weakly.

Bad symptoms are drowsiness, with blueness of the lips and finger-tips and fall of temperature to sub-normal (collapse of lung).

Treatment.—Let the child be kept in one room, the temperature of which is maintained at 65° F. Carefully avoid draughts, and give a dose of calomel.

Apply spongiopiline to the chest (back and front); and let the diet consist of milk, light soups, and barley-water. Give a mixture containing 1 drop of vin. antimonialis or 5 drops of vin. ipecacuanhæ with liq. ammon. acet. 20 drops in a little glycerin and water every two hours. When the temperature falls to normal, change your mixture to R 22. In the capillary variety, steam from a bronchitis-kettle, or turpentine, eucalyptus, or carbolic acid evaporated from a water-bath in the room is useful; and if the breathing becomes embarrassed, much relief will follow a stimulating emetic, as sulphate of copper (2 grs. to the ounce of warm water, a teaspoonful every five minutes) or half a teaspoonful of the ipecacuanha wine. Phenacetin is very often given with benefit, but caution is required, and it should never be prescribed for weakly children or continued over a long period; it may be given in 1 or 2 gr. doses every three or four hours. The greatest

caution must be exercised in giving opium, or any of its preparations, in this affection.

Watch the strength, and give stimulants on the first sign of depression (depressed fontanelle). When the secretion becomes free, resort to the stimulating mixture mentioned above, and later, if the temperature continues normal, give tonics of iron and quinine with cod-liver oil. The nourishment should be strengthening, as beef-essence, milk, and eggs, with the brandy-and-egg mixture of the B.P.

In chronic bronchitis, especially where considerable enlargement of the bronchial glands is present and general tuberculous infection is feared, guaiacol or creosote in 1-drop doses should be given three times daily, combined with cod-liver oil. If practicable, send the child to some winter resort (Ventnor, etc.). If not, clothe in flannel next the skin, give plenty of good nourishing food, and avoid draughts and wet. Tar is a useful remedy where the secretion is profuse, and can be given in drop doses on a piece of lump sugar thrice daily. Inhalations of creosote, carbolic acid, or tincture of iodine, twenty drops to the pint, or of turpentine one teaspoonful to the pint, are useful; counter-irritation, with small blisters, or the tincture of iodine, is useful in some cases.

CROUPOUS PNEUMONIA.—This is an acute inflammation of the lung tissue, occurring in children chiefly after the third year, the catarrhal variety being more common before that date. It is sometimes epidemic and infectious.

Causes.—Exposure to cold and wet; a low state of health from any cause, though a healthy and robust child may be attacked; excessive exercise producing fatigue, chilling of the surface when the body is perspiring, as sitting down to cool or standing in a draught. The exciting cause is the pneumococcus of Fränkel, a lance-shaped coccus which usually occurs in pairs as a diplococcus. After exposure to cold or other predisposing cause, the microbe gains greater virulence, or the lung tissue becomes less resisting—in other words, a suitable soil is presented to the pneumococcus.

Symptoms.—The onset is sudden, and may be by a convulsion if the child is under three years; the temperature rises rapidly to 105° F.; there is headache, rapid pulse and breathing, pain in the side which is often referred to the abdomen, flushed cheeks, and a short dry cough; there may be vomiting and diarrhoea, and delirium may be an early symptom, especially if the pneumonia is apical; there is no actual dyspnoea, but there is loss of the pulse-respiration ratio, which is an important symptom, the ratio being reduced from 1 to 3·5 to 1 to 2 or even 1 to 1·5; herpetic vesicles are common round the mouth; the tongue is dry and brown; the bowels constipated; and the urine scanty and high-coloured. This condition goes on for days, and generally between the sixth and ninth a sudden fall in the temperature announces the crisis, which in weakly children may be accompanied by collapse. Expectoration is often entirely absent.

Physical Signs.—Percussion will give dulness in the majority of cases over some region of the chest-wall, infra-clavicular, axillary, scapular, or at the base. Auscultation will give weak or distant breath-sounds; bronchial breathing; increased vocal resonance and fremitus; and you may have, in addition, pleural friction and various kinds of râles; if a large extent of one lung is involved, the breath-sounds in the other lung will be accentuated. Any part of the lung may be attacked; but the apex is much more commonly affected in the child than in the adult. These signs increase as the days wear on, but it is important to remember that the fine crepitation so characteristic of adult pneumonia may be, and often is, entirely absent. When present, the crepitation is heard only at the edge of the consolidation, *not over it*. Another important point is that these physical signs may not make their appearance for several days, there being nothing heard but tubular breathing, especially when the pneumonia is deeply seated. Rarely the classical signs are entirely absent. With the sudden crisis between the sixth and ninth days resolution sets in, and recovery is the rule. Exceptional cases terminate by

lysis, or there may be a crisis and a second rise of temperature the next day. The disease may end in abscess or gangrene of the lung, and may in weakly children be entirely "latent."

Varieties.—1. Abortive, where the characteristic signs never develop, and the disease is at an end in two or three days.

2. Creeping or wandering, likened by Henoch to erysipelas spreading over the surface of the lung. Such cases are chronic.

3. Cerebral, in which the nervous symptoms are prominent and the lesion often at the apex.

4. Gastric, where the gastro-intestinal symptoms are very marked for the first few days, and the attack may simulate gastro-intestinal catarrh or peritonitis.

5. Pleuro-pneumonia, where the pleural signs are most marked, and the pain in the side acute; effusion often takes place in these cases, and an empyema commonly results.

Complications and Sequelæ.—Pleurisy and empyema; pericarditis; meningitis; bronchitis; nephritis; gangrene of the lung and abscess; jaundice; diphtheria; and hyperpyrexia.

Diagnosis.—Bear in mind the following points: Sudden onset; high temperature (105° F.); loss of the pulse-respiration ratio; pain in one or other side or in the abdomen; dullness on percussion, with increased vocal resonance and fremitus; feeble or tubular breath-sounds over dull area; and fine crepitation at the edge of, *not over*, the consolidation.

Prognosis.—Favourable, when it is primary and the child is over three years of age. Secondary pneumonia is very serious, especially when it follows the eruptive fevers or comes on in the course of kidney-disease.

Treatment.—Put the child to bed in a room kept at a temperature of 65° F. Give fluid nourishment, such as light soups, and plenty of milk and barley-water or kali. Give 1-drop doses of vin. antimonial. or 5-drop doses of vin. ipecacuanbæ, with citrate of potassium gr. x. in glycerin and water every three or four hours; tr. of aconite is given in drop doses by many, but it requires care and watching, and is not as safe as

the others. Sir D. Powell gives liq. ammon. cit. ℥ xx. with potassii cit. gr. x. for the first few days, and then substitutes tr. ferri perchlor. ℥ x. every four hours in glycerin and camphor-water. A calomel purge is useful at first.

For the pain in the side, the following have been recommended: two leeches; a small blister; equal parts of chloroform, belladonna, and aconite liniments applied on lint; spongiopiline; linseed-and-mustard poultice; the ice-bag; cold lotions. The warm applications will generally be found the best. 1 to 3 drops of "nepenthe," 1 to 3 grs. of Dover's powder, or a small hypodermic injection of morphia.

Hyperpyrexia is best treated by cold sponging, the cold pack, the cold bath, or the ice-bag applied to the chest over the seat of the pneumonia. The best antipyretics are quinine, antipyrin, antifibrin or phenacetin in 2 or 3 gr. doses every four hours, to a child of three years. Watch the effect, particularly of antifibrin, which is apt to depress. Quinine may be most conveniently given for this purpose by the rectum (see Appendix).

Sleeplessness and delirium call for tepid sponging, or an ice-bag may be applied to the scalp, and, if the patient is robust, a few leeches to the temples may be used. 2 or 3 grs. of Dover's powder, or 2 or 3 drops of liq. morphia or "nepenthe" may be given at bedtime.

Dyspnœa and failure of the heart from distension of the right side should be met by wet cupping or leeches applied over the precordial region. Carbouate of ammonium, ether, and digitalis should be given, and in desperate cases the inhalation of oxygen and the hypodermic use of strychnine may be tried. In all severe cases stimulants will be necessary, and may be given with a free hand. When the temperature falls, the diet should be improved and tonics given.

CATARRHAL PNEUMONIA. — **Synonyms.** — Lobular pneumonia and Broncho-pneumonia. It is an acute inflammation of the bronchial lining membrane, which extends to the bronchioles and air-cells.

Causes.—This form of pneumonia is always preceded by bronchial catarrh, so that the causes which bring about bronchitis will be those also which tend to set up catarrhal pneumonia in the air-cells.

Measles and whooping-cough, inasmuch as they are always accompanied by a good deal of catarrh, are often the forerunners of this form of pneumonia; it often follows diphtheria; and is readily set up in weakly and ill-nourished children, and in those who have had attacks of diarrhœa. Struma, rickets, dentition, and bad sanitary conditions predispose to it.

Symptoms.—A child has had a bronchial attack for some days, when suddenly the disease extends to the air-cells, pneumonia being set up. The following change in the symptoms takes place: the temperature rises suddenly to 104° F., sometimes to 105° F.; the cough changes its character, and becomes short and hacking; the nares act; the face is slightly livid; the pulse and respirations are hurried, and the child is manifestly much worse than when it had "the cold." It is noteworthy that such a child will permit free examination of the chest now, whereas, previous to the onset of the pneumonia, it struggled vigorously. There is evident dyspnœa, and some perversion of the pulse-respiration ratio, but not to such an extent as in the croupous variety.

Diarrhœa is often present, and sometimes vomiting.

Physical Signs.—Percussion rarely gives much dulness; but it may often be detected by using two fingers on the chest and percussing with two fingers. As this form of pneumonia is generally patchy, a considerable amount of consolidation may exist without dulness being made out.

Auscultation will reveal a weak respiratory murmur in the early stage, and bronchial breathing over the dull area later. General fine bubbling rhonchus is heard, which becomes finer, drier, and crepitating in character, especially *over the area* where the breathing was bronchial; this is important, because in croupous pneumonia the crepitus is heard at the edge of the consolidation. As the disease advances, these separate patches

may coalesce, so that after some days percussio may reveal considerable consolidation, and auscultation a good deal of fine and dry crepitation both in inspiration and expiration, which is very superficial, as if generated just under the stethoscope. In favourable cases there is no crisis, but a gradual improvement in all the symptoms (lysis); often it takes on a sub-acute course, or this type may prevail from the beginning, as after measles, etc. These cases often continue for weeks, absorption taking place very slowly. This type of pneumonia is liable to leave behind it unabsorbed products in the lungs, which may become caseous, and lead to serious results afterwards.

The above description will be that met with in the majority of cases of catarrhal pneumonia, yet the symptoms may in many cases closely simulate those of the croupous variety, and we are often left in doubt as to which kind of pneumonia the child is suffering from. Recent researches tend to show that in these cases there is a mixed infection, the disease showing symptoms of both the croupous and catarrhal variety.

Morbid Anatomy and Pathology.—The lung shows some lobules in a state of collapse, and patches of a greyish colour slightly elevated are scattered throughout its substance. The alveoli are filled with large round granular cells, which are derived from the epithelial lining of the air-vesicles. These inflammatory products become absorbed in favourable cases by a process of fatty degeneration; often, however, the process becomes arrested, and the cells atrophy and become caseous. There are frequently small patches of pleurisy when the pneumonia has been superficial. These lesions are always found *in both lungs*, but usually in a more advanced condition in one lung than in the other.

Broncho-pneumonia is associated with several varieties of pathogenic organisms, such as the streptococcus, staphylococcus, Friedlander's bacillus, the tubercle bacillus, and others; but chief among them all is the pneumococcus, which is present in fifty per cent. of all cases. In secondary broncho-pneumonia, the organism most frequently present is the streptococcus;

and in primary broncho-pneumonia the pneumococcus, so that in the child primary broncho-pneumonia is of pneumococcal origin; or, in other words, the pneumococcus, which in the adult produces croupous or lobar pneumonia, in the infant and young child produces lobular or disseminated consolidation. This is likely due to the lungs in young children containing more interstitial tissue, and the air-cells being smaller and occupying less relative space; the epithelial lining of the small bronchi and alveoli is relatively larger, and so also are the cells. They respond more actively to slight irritation, under which they proliferate rapidly and are easily shed, thus giving the catarrhal or epithelial character to the resulting inflammation.

Diagnosis.*

Catarrhal Pneumonia.

Child usually under three years.
Often immediately preceded by measles, whooping-cough, or scarlatina.
Attack begins gradually, and usually with chilly sensations only.

Temperature not so high, and rise gradual. Remissions of three to four degrees common. Fever very irregular.

Breathing rapid and laborious; accessory muscles of respiration used. Paroxysms of dyspnoea.

Pulse-respiration ratio, 1 to 2.5 or 1 to 3.

Consolidation varying in extent in both lungs. Râles heard over both lungs. Apex not involved.

Dulness seldom extensive; usually in more than one spot. No fine

Croupous Pneumonia.

Child usually over three years.
Usually immediately preceded by good health.

Attack begins with one or more of the following: chills; headache; pain in the epigastrium, abdomen, or side; delirium; convulsions; and vomiting.

Sudden rise of temperature to 105° F. in twenty-four hours. Remissions slight. Fever tolerably regular.

Breathing rapid, but not laborious, and accessory muscles not called into play. No dyspnoea.

Pulse-respiration ratio, 1 to 2 or 1 to 1.5.

Consolidation one-sided. Apex frequently involved.

Marked dulness over a considerable area not infrequent. Fine

* "Cyclopædia of Children's Diseases" (Keating), vol. ii. p. 635.

crepitant râles, but often coarse crepitation. Over spots where dulness is detected the respiration is weak, distant, or blowing.

Duration indefinite, but much longer than that of the croupous variety.

Lysis.

Often leaves permanent lesions. Very fatal.

crepitant râles on the edges of consolidation, and bronchial respiration, bronchophony, and increased vocal resonance over centre.

Duration seven to ten days.

Crisis.

Recovery almost always perfect.

Recovery the rule.

In simple bronchitis the temperature is rarely high, resonance is not impaired. When the attack becomes chronic, bear in mind the possibility of the case being complicated with tubercle.

Prognosis.—Always grave, especially under two years, and in the rickety and delicate.

Treatment.—Place in a good-sized room kept at a temperature of 65° F.; carefully avoid draughts; steam from a bronchitis-kettle is useful, and a teaspoonful of tr. benzoin. co., eucalyptus oil, turpentine, or terebenc may be added to the water in the kettle. Give milk diet and light soups. Apply spongiopiline back and front, and renew it every four hours; mustard-water may be used to damp the lint. In the early stage, when the temperature is high, and the skin hot and dry, tepid sponging carefully done is very grateful, and the bowels should be freely moved with calomel: a mixture containing vin. antimonialis one drop, or vin. ipecacuanhæ five drops, with liq. ammon. cit. twenty drops, may be given every three hours; later, when the cough becomes loose, and the secretion free, ammonia carb. with digitalis and squills should be substituted, and stimulating liniments take the place of the spongiopiline, or mustard-and-linseed poultices. Half a teaspoonful of brandy will now be useful three or four times daily, and the diet should be more generous. Pepper speaks highly of strychnine at this time; no drug, he says, compares with it in efficiency for respiratory and muscular stimulation. His prescription is as follows for a child of five years:—

℞ : Quinine sulph.	gr. xxiv.
Strychnine sulph.	gr. $\frac{1}{4}$
Acid. hydrochlor. dil.	ʒ ss.
Glycerin	ʒ iii.
Liq. pepsinæ ad	ʒ iv.

ʒ i. every four hours in water.

During convalescence a change to the seaside, and iron-and-quinine tonics will be indicated. Often the digestion is left impaired in these cases, and tincture of nux vomica, with dilute hydrochloric acid and a little pepsin wine, will be useful in restoring it.

Hyperpyrexia, or other complications, must be met and treated promptly as they arise. A few leeches to the sternum, and the inhalation of oxygen gas should be tried in those cases where there is marked cyanosis, or an emetic often gives relief.

PLEURISY.—Definition.—An inflammation of one or both pleural surfaces, which may be either acute or chronic, primary or secondary, circumscribed or general.

Causes.—In by far the greater number of cases pleurisy arises spontaneously, and is due to the invasion of one or other of the following microbes, viz. the tubercle bacillus, the streptococcus, or the pneumococcus. Exposure to cold and wet, or a fall or blow on the chest will bring about such an altered state of nutrition of the pleura as favours invasion by specific microbes. Secondary pleurisy may arise from extension of inflammation from the lung, pericardium, or peritoneum; or in the course of acute rheumatism, measles, scarlatina, typhoid, small-pox, phthisis, Bright's disease, congenital syphilis, or pyæmia.

Symptoms.—Chilliness; pain in the side, followed by cough—note that the pain is often referred to the abdomen; diminished movement on the affected side; headache, vomiting, and furred tongue; quick pulse; temperature, 102° or 103° F.; respirations increased, but not out of proportion to the pulse, as in pneumonia; little or no prostration; often the disease is not ushered

in by so pronounced symptoms, and advice is sought on account of pallor, shortness of breath, and loss of appetite. Pain disappears when effusion takes place.

Physical Signs.—*Inspection.*—Some impairment of movement, and the cyrtometer shows the affected side to be larger (squarer); displacement of organs (heart, liver, spleen); superficial œdema on the affected side is occasionally present.

Palpation.—Obliteration or diminution of intercostal spaces; fluctuation, by tapping with the finger between two ribs, may be detected by a second finger placed on a distant part of the same space; vocal fremitus is lost, as a rule.

Percussion.—Complete dulness, and increased sense of resistance over the effusion. The resonance upon the sound side is increased, and may even be tympanitic. By percussing the chest in front with two coins, and auscultating behind, a pleural effusion will often be found to transmit a clear metallic sound (penny sound, or *signe de sou*), quite unlike that heard through healthy or solid lung. **NOTE.**—In the upper intercostal spaces in front, along the side of the spine behind, and in the infra-axillary region, a tympanitic note is often elicited, due to the presence of underlying relaxed lung tissue in the first and second, and to the conduction of the stomach note in the last. The dulness is modified or disappears with change of position of the patient. At an early stage percussion may give rise to much pain over the seat of friction.

Auscultation.—Weak and distant breath-sounds, but quite often they are of a bronchial or tubular character, with friction above the upper border of the effusion; vocal resonance greatly diminished as a rule, but it is often bronchophonic about the lower angle of the scapula, or ægophonic. Friction is common, but differs from that heard in the adult by being quite like coarse crepitation; it is, however, very superficial, sounding as if generated just under the stethoscope. Make the patient cough, and if the sound you hear is intra-pulmonary, it will be modified; if due to pleural friction, it is unchanged.

When the fluid is large in amount, there may be consider-

able dyspnoea, especially if the effusion is on the left side; the child will now be seen to lie on the affected side or on its back; its nostrils work, and the respirations are increased often to forty a minute. Where the fluid is smaller in quantity, little or no discomfort is complained of, but dyspnoea is evident on the least exertion. A systolic pulmonary murmur is sometimes heard along with pleural effusion; it disappears when the fluid is drawn off.

Terminations.—The fluid becomes quickly absorbed, and the child is restored to health in favourable cases. Some retraction of the side may remain for a time where absorption is slow, but this disappears. In other cases the child's health remains below par; the fluid does not get absorbed, but forms thick layers of lymph over the pleural surfaces of the lung and chest-wall; in this way adhesions may be formed. The fluid may become pus, and this it is very liable to do in children. Dr. Ashby says, "This is not a common result if the fluid effused is at first serum; an empyema is an empyema from the first, as a rule." When the fluid has become purulent, absorption goes on very slowly or not at all. If not removed by operation, it points at some part of the chest-wall, and discharges itself. It may open into a bronchus and be coughed up.

Varieties.—(1) Dry or plastic; (2) loculated; (3) diaphragmatic (rare); (4) tubercular—usually double.

Complications.—Tuberculosis; amyloid disease; pericarditis; bronchitis; pneumonia; emphysema, collapse of the lung, and peritonitis.

Diagnosis.

Pleurisy.

Onset moderately sudden, and symptoms not severe—chilliness and pain in the side, followed by cough.

Temperature not high, 101.5° or 102° F.

Pulse-respiration ratio not disturbed.

Pneumonia.

Onset very sudden and symptoms severe, convulsions, etc. Cough first, followed by pain in the side.

Temperature very high, 104° or often 105° F.

Pulse-respiration ratio greatly disturbed.

Face is pale, and there is little loss of muscular power.	Bright crimson flush on the cheeks, and the muscular prostration is considerable.
Cough is dry and painful.	Cough occurs in short hacks, and the sputum, when brought up or not swallowed, is rusty.
Organs displaced.	Organs not displaced.
Dulness on percussion complete, with sense of great resistance.	Dulness not complete, and the sense of resistance almost <i>nil</i> .
Respiratory sounds much diminished, and friction heard at upper margin of effusion.	Respiratory sounds tubular, and fine crepitation heard at border of consolidation.
Vocal resonance greatly diminished.	Vocal resonance increased.
Vocal fremitus diminished or absent.	Vocal fremitus increased.
The upper limit of dulness varies with the position of the patient.	The dulness is not modified by change in position.
The physical signs are found both at the back and front of the affected side.	The physical signs are limited to the front or back of the chest.
In case of doubt, introduce a fine needle, when you will draw off serum of pus.	No fluid is withdrawn.

To diagnose whether the effusion is serous or purulent, introduce the needle, which decides the case at once. The presence of streptococci, staphylococci, or pneumococci in a serous effusion may be taken as affording pretty certain evidence that the effusion, if allowed to remain, will become purulent. A change in the complexion to a yellowish tint, and clubbing of the finger-tips, are looked upon as pointing to the fluid having become purulent.

Hydrothorax is almost always a part of general dropsy; there is kidney or heart disease; and the effusion is double.

Prognosis.—Primary idiopathic plenrisy is seldom fatal when the fluid remains serous; a change of the effusion to pus, and a high temperature, are bad signs, especially if the fever remains after tapping.

Treatment.—Put the child to bed at once in a warm room; give milk diet and light soups; let it have a diaphoretic every two hours, such as R 19.

If the pain in the side is severe, a hypodermic of $\frac{1}{12}$ gr. of

morphia may be given; or two leeches applied; or the side strapped with plaster. In many cases hot turpentine fomentations, or a linseed-and-mustard poultice, or chloroform and belladonna liniment will give much relief. A few grains of Dover's powder may be given, and it will be well to open the bowels with a purgative. Give diaphoretic mixture until the temperature reaches normal, and then substitute one containing iodide of potassium for it, in full doses of 3 grs. every six hours, steadily increased. At the same time, begin counter-irritation to the chest in the form of small repeated blisters or tincture of iodine. If there is no sign of the fluid getting less in a week or ten days, add 5 grs. of the tartrate of iron to the mixture. Tincture of bryonia, in 5-min. doses, may be tried to bring about absorption. The diet at the same time should be improved, and cod-liver oil given. If at the end of three weeks there is no diminution in the amount of fluid, introduce the needle, and, if you get serum, aspirate to the extent of about 8 ozs. If you get pus, open the pleural cavity by incision, and resection of a portion of rib, and drain it; continue the mixture. Paracentesis should be performed at any time during the stage of effusion, when there is embarrassment of the heart and dyspnœa, and also when one side of the chest is full, even without urgent symptoms.

TUBERCULOSIS OF THE TRACHEO-BRONCHIAL GLANDS.—Groups of lymph glands are placed on either side of the windpipe, and the bronchial glands, which are continuous with them, surround the main bronchi and pass deeply into the lungs. These glands are arranged in three groups—

- (a) One group surrounds the trachea.
- (b) A second group is situated at the bifurcation of the trachea.
- (c) A third group surrounds the bronchi and passes more or less deeply into the lungs.

They readily take on inflammatory action during attacks of bronchitis or broncho-pneumonia, but especially after measles and whooping-cough they are apt to remain in a state of chronic induration, and eventually to become caseous.

They may further become enlarged and caseous, apart from any local lesion in the lungs, and in a large proportion of all cases of general tuberculosis met with in children, it would appear that the primary seat of infection is to be found in these structures.

Symptoms.—As caseating mediastinal glands are generally associated with early or chronic tuberculosis of the lungs, the general health will usually be found affected, and the child will be dull and listless, with poor appetite, more or less wasting, and perhaps some slight hectic at night. Cough is generally complained of, and on auscultation nothing in the chest is found to account for it; further, this cough proves intractable, it is not relieved by the ordinary remedies, and these two symptoms should arouse your suspicions, especially if the child has had measles or whooping-cough at a recent date. If the breath sounds are weak over one lung, it is a sign of undoubted value, and attacks of paroxysmal dyspnoea with cough and stridulous breathing are sometimes met with when the glands are pressing upon and irritating the nerves. Barthez and Sanné mention dropsy and cyanosis from pressure on the veins, but these are due, probably, more to the spasmodic cough.

Percussion may yield a dull note over the upper end of the sternum, or in the inter-scapular region over a space corresponding to the first three dorsal vertebræ, but the presence of the thymus gland in this situation must not be forgotten.

Eustace Smith and Hare* state that the diagnosis of enlarged bronchial glands may be made by directing the patient to throw the head well back, and then placing the stethoscope below the supra-sternal notch, when a "purring" sound will, in most cases, be heard during respiration. This sound is believed to be due to the pressure of the glands upon the venous trunks.

The trachea or one of the bronchi may be ulcerated into, and caseous matter coughed up, or the œsophagus may be perforated in a similar way.

* "Mediastinal Disease," Fothergillian Prize Essay, 1888, p. 148.

Treatment.—Place the child under the best hygienic conditions, so that there will be the least possible irritation of the trachea, bronchial tubes, or lungs; in other words, let it live in the country or by the seaside, and away from the smoke and dust of large towns. Cold and damp are to be avoided at all times, and, if practicable, residence in a warm climate during the winter months should be advised.

The diet should be nutritious and easily digestible, and varied so as to tempt the appetite, which is often capricious in these cases.

Creosote or guaiacol (1 drop in capsule) should be given three times daily immediately after food, and cod-liver oil with malt extract or the hypophosphites in suitable dose one hour after food. Counter-irritants are useful, and should be applied over the front of the neck and upper part of the sternum, or in the inter-scapular region; small blisters frequently changed from one site to another, or iodine in the form of the tincture, or the liniment, diluted one-half with glycerin, brushed on every night until the skin becomes tender, are those most frequently resorted to. For infants and young children milder applications should be used, such as Stokes's liniment or the lin. pot. iodid. c. sapone. The front of the neck and chest should be well guarded against cold by wadding or swansdown. To relieve the troublesome cough in these cases, inhalations of steam every three hours may be tried, and a teaspoonful of tr. benzoin. co. or tr. eamph. eo., or spirits of turpentine or eucalyptus oil may be added to the water; hot fomentations or poultices of linseed and mustard are favourite and household remedies, and a little warm gin or whisky punch at bedtime is often very useful. A mixture containing a few drops of nepenthe or liq. morphinæ may be allowed two or three times a day, and should the dyspnœa become urgent, inhalation of chloroform, ether, or nitrito of amyl will usually relieve, or a small hypodermic of morphia may be tried.

TUBERCULOSIS OF THE LUNGS.—**Definition.**—A disease caused by the invasion of a specific bacillus, which

gives rise to local irritation and terminates in extensive destruction and induration of lung-tissue.

Causes.—Hereditary predisposition; scrofula; catarrhal pneumonia; measles; whooping-cough; scarlatina; and everything that interferes with the strength of the child, as bad food, bad ventilation, unsanitary dwellings, etc. All authorities look upon Koch's tubercle bacillus as the common cause in all cases.

Symptoms.—Acute phthisis, or "galloping" consumption, is usually preceded by an attack of catarrhal pneumonia, and the early symptoms are the same as in this disease, only more severe, the catarrhal products undergoing rapid caseation and softening. Dyspnoea is an early symptom; the temperature is high—104° or 105° F. at night, falling to 100° or 101° F. in the morning; and there may be copious night sweats. Cough brings up a whitish expectoration at first, which later becomes yellow or greenish, and is unmmulated; in it tubercle bacilli are usually found together with yellow elastic fibres. Hæmoptysis is not often seen. Percussion gives dullness at one or other apex or at both, but the signs are more advanced on one side than on the other.

Auscultation gives bronchial breathing and coarse crepitation, both with inspiration and expiration, and later, when cavities form, cavernous respiration, bronchophony, and pectoriloquy.

Wasting is very rapid; the digestion is thoroughly upset; diarrhoea may be severe; and death is preceded by great prostration, restlessness, insomnia, anorexia, and sordes upon the teeth and lips. The disease rarely lasts longer than six months, often much shorter.

Diagnosis.—From cronpons pneumonia, by the remission in the temperature in the morning; at the end of the first week, instead of a crisis, the symptoms continue and the other apex becomes affected; tubercle bacilli and elastic fibres are found in the sputum.

Prognosis.—This disease is almost universally fatal.

Treatment.—Lower the temperature by cold sponging, cold packs, or cold baths. Maintain the strength by hourly feeding, both day and night, with nourishing and easily digested foods, as milk, cream, custard, soups, and beef-essences, and give a teaspoonful of brandy every four, three, or two hours, according to circumstances. The profuse night sweats should be controlled by liq. atropiæ sulphatis min. $\frac{1}{4}$ at bed-time, and, as children bear this drug well, you can increase the dose without fear, if it is not sufficient; or you may give the $\frac{1}{100}$ gr. of atropine hypodermically. It is usual to give some linctus for the cough, such as 5 to 10 drops of tr. camph. co. with glycerin and water to a teaspoonful may be taken every four hours, or 2 or 3 drops of liq. morphiæ in syr. tolu and water.

CHRONIC PHTHISIS.—There are two varieties: (1) Chronic catarrhal or Pneumonic phthisis; and (2) Chronic tubercular phthisis.

Symptoms.—1. **CHRONIC PNEUMONIC PHTHISIS.**—After an attack of acute catarrhal pneumonia, it is noticed that the child has not recovered its strength; that the cough continues, with some feverishness at night; it looks pale, eats its food without relish, and is easily tired. Percussion gives dulness at one apex or at the base, or in the interseapular or axillary regions.

Auscultation gives bronchial breathing and crepitation. Vocal resonance may be increased, and expiration prolonged. And yet one is often surprised how little can be detected in the chest even when it is evident that the child is far advanced in tubercular disease. When softening sets in, the general symptoms are more definite, such as a temperature of 102° or 103° F.; cheeks flushed at night, pale in the morning; the face wears a distressed look; and there is sweating at night or in the early morning; wasting sets in; the child loses its good spirits; and the appetite and digestion fail.

The cough is hacking and loose; the sputum is muco-pus or greenish pus, with tubercle bacilli and elastic fibres in it; hæmoptysis is quite rare in children.

Later the physical signs are increased to moist râles and blowing or cavernous breathing, and the opposite apex is usually now involved. Diarrhoea is often present, and if this complication persists, pointing to implication of the mucous membrane and the glands of Peyer's patches, rapid wasting and death result.

2. CHRONIC TUBERCULAR PHTHISIS.—This form begins very gradually with loss of appetite, languor, and disinclination for any games. The child is pale in the daytime and flushes at night, and after some weeks begins to have a short cough, which gradually becomes more frequent and attracts attention. The temperature is raised to 101° or 102° F. at night; wasting begins, and proceeds steadily; the breathing is rapid, and Niemeyer considers this the earliest sign; the appetite is poor; and vomiting and purging are frequent.

Physical signs appear late and are often very insignificant, such as slight loss of resonance at the apex, or elsewhere, with weak and harsh breath-sounds. A click is caught at the end of inspiration, which is better heard if the child gives a cough. As time goes on, the physical signs become more pronounced, and are now generally present at both apices, but more marked on one side than the other, so that, after a time, the case presents much the same characters as those of catarrhal phthisis.

These two forms of chronic phthisis may be combined in scrofulous children who have suffered from long-standing disease of joints. The majority of cases are seen in children of six or seven years and upwards.

Diagnosis.—Of phthisis in general, be careful to get an accurate and full account of the whole illness from the beginning. The hectic fever and cough, sweating and loss of flesh, with patches of consolidation in the lungs, are suspicious, and should always suggest the disease; examine the sputum, and, if you get tubercle bacilli and elastic fibres, the diagnosis is certain.

To distinguish between pneumonic and tubercular phthisis, remember the difference in the mode of onset—the one following

catarrhal pneumonia, the other beginning insidiously and creeping on gradually; in the one the general symptoms are mild, in the other severe; in the one the physical signs reveal considerable mischief at the apex, in the other scarcely anything can be made out.

Dilated bronchus may simulate cavity, but it is usually at the base, cavity at the apex; dilated bronchus tends to get smaller, cavity to get larger; also examine the sputum, which will decide the diagnosis.

Empyæma.

Begins with pain in the side, followed by cough.
Dulness complete, with sense of great resistance.
The dulness is found at both the front and back of the chest, and reaches down to the extreme base.
Disease is limited to one lung, the other being healthy.
Displacement of organs.
Ægophony frequently heard.

Chronic Phthisis.

Follows pneumonia, or creeps on very gradually.
Dulness not complete, and sense of resistance not so great.
Dulness found more at the front, and usually at the apex.
Nearly always affects both lungs.
No displacement of organs.
Ægophony never heard.

Ashby gives the following clinical differences between the phthisis of older children and adults:—

1. Frequency with which children in the first stage recover.
2. Frequency with which the disease is brought to an abrupt termination by some acute affection, as tubercular meningitis, pleurisy, peritonitis, or acute miliary tuberculosis.
3. Comparative rarity of hæmoptysis in the early stage, and of laryngitis in the later stages.
4. Frequency of complication with abdominal tuberculosis.
5. Comparative rarity, as compared with that of adults, of extensive cavities in the lungs.

Prognosis.—In pneumonic phthisis, if the case is seen early, the consolidation, under treatment, may become absorbed. When the signs point to softening having taken place, the case will end fatally, after a shorter or longer time, in proportion to the care and treatment it will receive.

In tubercular phthisis, the case generally goes steadily down the hill, although life can be prolonged by climatic and other treatment if begun early.

Treatment.—*Prophylactic.*—Children of phthisical parents should not be suckled by their mother, but a wet-nurse obtained. Plenty of fresh air and exercise calculated to expand the chest, should be enjoined; special care taken to prevent colds, and, if they are contracted, promptly treated; warm clothing; and good nourishing and easily digested food, avoiding too much sweets and farinaceous matters. Measles and whooping-cough require especial care in their management during convalescence, and it is right to warn parents of the tendency these diseases have of calling into activity any lurking constitutional weakness. Warn the parents against the pressure of school duties, which is great nowadays. In short, everything that conduces to a sound state of health should be recommended.

When the disease is established, the treatment resolves itself into relieving symptoms and supporting the strength. Creosote or guaiacol in drop doses, gradually increased up to five drops, should be given in capsules three times daily immediately after food. It may also be used by inhalation as follows: Creosote 80 minims, light carbonate of magnesium 30 grains, and water to one ounce. A teaspoonful of this in a pint of boiling water may be inhaled three times daily. Intrapulmonary and intratracheal injections of guaiacol have been practised. Hypodermically, it is used with sterilized olive oil, 5 per cent. solution, and 1 c.c. of the solution injected, gradually increasing to 3 c.c. or 4 c.c. Bad effects rarely follow the use of creosote or guaiacol, and those who can take large quantities and enjoy fresh air, good diet, and exercise benefit most.

Cod-liver oil, with or without hypophosphates, is useful, and some simple soothing mixture for the cough is generally required. Residence in a warm climate, especially during the winter months, will be beneficial.

ACUTE PULMONARY TUBERCULOSIS. — **Causes.** — Hereditary tubercular predisposition, which is usually strongly

marked; measles and whooping-cough often precede it; or a condition of delicate health may have existed for some time previous to the outbreak of lung-trouble.

Symptoms.—There are two forms of the disease: (1) the Typhoid; and (2) the Broncho-pneumonic. The latter has been described under the head of Acute Phthisis.

In the typhoid form the onset is very gradual; the child is dull and listless, wastes, and is feverish at night, with some cough. Gastro-intestinal symptoms are common at this time, such as loss of appetite, furred tongue, and frequent attacks of diarrhoea without any assignable cause; soon more definite symptoms are added, and the cough becomes short, frequent, and hacking, especially so at night; auscultation reveals crepitations and loose râles at the apices, bases, or pretty generally over the lungs. Dyspnoea is a marked symptom in many of these cases, and is an important sign in the absence of fever and increased pulse-rate to account for it. The eyes should be examined with the ophthalmoscope, when miliary tubercles may be found in the choroid as small, rounded, yellowish bodies, scattered about the fundus. The hectic symptoms increase, the wasting is rapid, the strength quickly fails, and in some cases the disease may run its course in three weeks or a month, or linger on for two or three months. Tubercular meningitis is very liable to supervene and terminate the case with all the signs of this disease.

Diagnosis.—The disease with which it is most likely to be confounded is typhoid fever, and the diagnosis, at an early stage, is often quite impossible. Close observation of the case, with frequent examination of the chest, will be necessary, and a combination of symptoms, such as short hacking cough, hectic temperature, with crepitations heard over the lungs, would point to acute tuberculosis. The dyspnoea is an important point, as it is absent in typhoid, and the presence of miliary tubercles in the fundus oculi would decide the diagnosis.

Prognosis.—This is all but hopeless. There may be a chance if the case is seen early, but it is very faint.

Treatment.—This can only be palliative, as no drugs have any effect on the established disease. Much can be done to relieve cough and reduce high temperature, by giving codeia in small doses, and by tepid sponging, or the cold bath; quinine may be given, but antipyrin and antifebrin require great care in their use, and, as a rule, are not well suited to these cases; digitalis and bark is a useful combination, and should have a trial. The strength should be maintained by strong soups, eggs, and milk, and the brandy-and-egg mixture given every three hours.

LARYNGISMUS STRIDULUS.—**Synonyms.**—Spasm of the glottis, Child-crowing, Internal convulsion, and Cerebral croup.

This is a common affection, consisting of spasm limited to the respiratory muscles, which affects the glottis alone, or spreads to the diaphragm and other respiratory muscles. It is a pure neurosis.

Causes.—Is met with in newly born infants, or in children up to the second year. Rickets; foul air; hot, ill-ventilated rooms; dyspepsia and inherited neurotic taint; and the cold months of the year, but especially March, all predispose to this affection.

Exciting Causes.—Pressure of an enlarged thymus or of enlarged bronchial glands on the recurrent laryngeal nerve; chronic hydrocephalus; exostosis of the skull-cavity; and the pressure of a hard pillow on a softened occiput, have all been advanced as causes, but are now abandoned generally. More likely there is peripheral irritation somewhere, as a hard and tense gum, some disorder of the stomach or bowels, a fit of crying or of anger, a fright or sudden start, or the act of swallowing, sometimes seems to give rise to an attack; and Henoch places a chill followed by catarrh as the most frequent cause.

Symptoms.—The child becomes suddenly quite stiff, and stretches itself out to its full length; the head is drawn back, the face congested and livid, the eyes staring, and the expression

one of fright. In less severe forms the child will stretch itself and give a crow or croak, and the attack is over. The spasm lasts but a few seconds, and the breath is drawn in with a loud crow; the child is frightened, and often cries, but, as a rule, soon falls into, and remains for some hours in, a sound sleep. In more severe cases the spasm is repeated several times at short intervals. There is no pyrexia, and in bad cases the sphincters are relaxed. Carpo-pedal contractions are common, and in the most severe form of the affection the convulsive seizure extends to the diaphragm and other respiratory muscles, or the convulsion may become general. In infants the symptoms are as follow: the lips turn blue, and the face gets livid; the baby stretches itself out stiffly, and remains for a few seconds motionless, with flexed fingers and toes; in fact, it seems dead, and there is great consternation, but, after a few seconds, it draws a deep sigh, and the attack is at an end. Many of the most severe cases are not followed by a definite crow; in fact, the crow is most frequent in the mild and less severe cases.

Diagnosis.—The following table, taken from Ashby and Wright,* gives the points:—

<i>Laryngismus Stridulus.</i>	<i>Catarrhal Laryngitis.</i>	<i>Membranous Croup.</i>
Occurs in rickety children and under eighteen months of age.	Rarely occurs under two years; commonest two to seven years of age.	Occurs at all ages during childhood.
No fever, and no coryza or laryngeal catarrh.	Slight fever, mostly coryza and laryngeal catarrh.	Fever variable and perhaps some diphtheria of the fauces.
Occurs at any period of the twenty-four hours, and often many times.	The attack occurs at night.	Mostly worse at night.
No cough; inspirations are stridulous.	Metallic cough; stridulous respiration; variable dyspnoea.	Metallic cough; stridulous respiration; progressive dyspnoea.

* "Diseases of Children," 3rd edit., p. 187.

Carpo-pedal contractions or general convulsions not uncommon.	Convulsions rare.	Convulsions rare.
The attack lasts a few seconds, and frequently recurs.	Attack passes off in an hour or two.	Becomes steadily worse though variations occur in its progress.
Occasionally fatal.	Rarely fatal.	Very often fatal.

To distinguish laryngismus from infantile tetanus, note that there is no fever, and that complete relaxation of the muscles takes place between the attacks or after a single one.

Prognosis.—Bad in new-born infants. In older children, take into account the strength of the child, and the presence or absence of rickets. In all cases, even the mildest, it is best to speak guardedly.

Treatment.—If the child is seen during an attack, endeavour to break the spasm by calling into action some other set of muscles; thus induce vomiting by passing a feather or the finger into the pharynx; dash cold water on the face, upper part of the chest, or down the back; or apply a sponge wrung out of hot water to the larynx; or apply smelling-salts to the nose. To prevent a return of the paroxysms, cold water sponging from head to foot three times daily, and plenty of fresh air, with abundance of clothing and flannel next the skin, are the best measures, and remember that nothing is worse for these children than to keep them shut up in a close room. Make a careful search for any source of irritation, such as tense and swollen gums, which should be incised; examine into the state of the digestive and respiratory systems, and correct any faults in them, especially the first, for great errors are constantly committed in the feeding of infants. For drugs, musk and belladonna may be given in doses of $\frac{1}{3}$ gr. with 10 min. of the tincture three times daily. Some prefer chloral and bromide of potassium, sodium, or ammonium, in doses of 2 grs. of the former, with 5 grs. of either of the latter, every four hours, to a year-old child. In very bad cases, the inhalation of chloroform or nitrite of amyl should be resorted to, and in

desperate cases artificial respiration. Faradization of the recurrent laryngeal nerve, and tracheotomy or intubation may be called for.

CATARRHAL LARYNGITIS.—**Synonyms.**—Spasmodic croup, False croup, Inflammatory croup, Catarrhal croup.

Etiology.—**Age.**—Is seen after the second year as a rule; from two to eight years the commonest time; after eight it again becomes rare; when it occurs before the second year the child is generally rickety.

Sex.—More frequent in the male sex—two to one.

Epidemics and Seasons.—Epidemics of measles and scarlatina, seasons of damp and cold, and the winter and spring months favour it. It is often among the early symptoms of whooping-cough and measles.

Constitutional.—An hereditary neurotic tendency. It is seen as often (some think oftener) in the robust and healthy as in the puny and delicate.

Exciting Causes.—Exposure to damp and cold; sudden chilling of the body; gastric catarrh; indigestion; catarrhal inflammations; screaming; violent coughing; inhalation of irritating substances, as steam, smoke, cold air, or dust.

Symptoms.—This affection consists of catarrh of the larynx, with the addition of spasm. In some children a very trifling amount of catarrh may set up the complaint, and in these cases we generally find the subject to be rickety. There are two forms: *the mild*, and *the severe*.

The Mild Form has very little accompanying catarrh, and for this reason is often called spasmodic laryngitis. The attack usually breaks out about twelve or one o'clock at night, with a hoarse, barking, sonorous cough, and a loud whistling stridor in the breathing. Note that *the stridor is confined to inspiration, the expiration being short and comparatively noiseless*. The soft parts of the chest sink in at each inspiration; the nares act; and the eyes are staring and frightened-looking; the voice is hoarse and loud,—it is rarely weak, suppressed, or whispering. The seizure lasts from ten minutes to half an hour or

more, when it gradually subsides, and the child falls asleep; but it is usual for it to have another, though milder, attack towards morning, or for one or two nights following. On the following morning there is noticed some general catarrh; some thickness of voice; and the cough has still a loud clang; but these pass off in a day or so. During the attack the temperature may be 101° or 102° F.; but it is usually normal, or nearly so, in the morning.

The Severe Form.—All the symptoms, as above described, are present in a more severe form, and the complaint does not pass off so quickly. There is general bronchial catarrh; the attacks come on in the daytime as well as at night; between the attacks the breathing is croupy and oppressed, and the voice and cough hoarse; there is considerable dyspnoea, with, in bad cases, lividity of the face, hands, and fingers; convulsive seizures may now come on, and collapse at the bases of the lungs may often be detected. Albumen in the urine is very rare.

Diagnosis.

Catarrhal Laryngitis.

True Membranous Croup.

Invasion is sudden, and the dyspnoea attains its maximum intensity *at once*.

The voice is rarely suppressed.

The cough is loud and clanging.

The stridor is confined chiefly to inspiration.

The sub-maxillary glands are not enlarged.

Rarely albumen in the urine.

There is no false membrane coughed up or to be seen in the pharynx.

The dyspnoea begins gradually, and attains its maximum by degrees.

The voice becomes entirely suppressed.

The cough is muffled and whispering.

The stridor is as marked in expiration as in inspiration.

These glands are enlarged.

Albumen in the urine common.

False membrane is usually coughed up, and is generally to be seen in the pharynx.

When the disease is exceptionally severe, the points to be relied upon as excluding diphtheritic croup are: 1. The severe and sudden onset. 2. The comparative absence of stridor in the expiration. 3. The quality of the voice, which is never whispering or suppressed. 4. The age; for in a child under

twelve months or over seven years the case is very unlikely to be one of catarrhal laryngitis.

Catarrhal laryngitis may be confounded with laryngismus stridulus (see latter disease); with retropharyngeal abscess, in which the breathing is embarrassed when the child lies down. Bending forward the head, by bringing the abscess over the larynx, greatly increases the dyspnoea; manipulation detects a round swelling in the back of the pharynx.

Oedema of the glottis is usually the result of a scald or burn; the distress is more continuous, without marked remissions, and the thickened epiglottis can be felt with the fore-finger.

Prognosis.—This is favourable, even in the severe cases.

Treatment.—Put the child in a warm bath, 95° F., for ten to fifteen minutes; make it vomit, by giving a teaspoonful of hippo wine in warm water; and give one teaspoonful of the following mixture every two hours, till the spasm and cough are relieved: Tr. aconiti, ℥ i.; vin. ipecac., ʒ i.; syr. tolu, ʒ iii.; and liq. ammon. acet., ʒ i. Confine to a warm room, 65° F.; and open the bowels well with calomel. The diet should be light, as milk, soups, and fish; and pastry, sweetmeats, etc., are to be forbidden.

In the severe form, convert the cot into a tent-bed, and steam with a bronchitis-kettle, adding to each pint of the water a teaspoonful each of tincture of benzoin co., and compound tincture of camphor, or two teaspoonfuls of the following: Sodii bicarb., ʒ i.; sodii benzoat, ʒ i.; acid. carbolic, ℥ xii.; glycerin, ʒ i.; and aq. destill., ʒ ii. The bath, emetic, etc., are here also indicated, and Graves of Dublin applied a sponge wrung out of very hot water to the front of the neck. Small doses of tartar emetic are very useful at the beginning of the attack, such as 2 drops of the vin. antimonialis in glycerin and water given every two hours to a child two to four years old. A few leeches to the front and sides of the larynx may be applied at this time, and in plethoric children they are often of great service. Should the difficulty of breathing become very urgent, inhalations of nitrite of amyl or chloroform may be

given. The question of intubation or tracheotomy may arise, and while it is very rarely necessary to resort to operation in this affection, it should never be delayed too long. Complications of pneumonia and bronchitis should be carefully looked for and treated vigorously.

This affection is liable to become a habit, and it is advisable to prevent these attacks by having the child kept much in the open air, and giving a cold douche every morning: flannel next the skin should be worn from head to foot.

CHAPTER IX.

DISEASES OF THE CIRCULATORY ORGANS.

PERICARDITIS.—**Causes.**—Rheumatism; pleurisy, pneumonia or peritonitis by extension of the inflammation: scarlatina, measles or small-pox: Bright's disease of the kidneys; septicæmia; or tuberculosis. It may also be caused by abscess, enlarged glands, or bone disease in the vicinity: by blows, contusions or fracture of ribs, by penetrating wounds or foreign bodies lodged in the œsophagus such as pins, needles, or fish-bones. In the very large majority of cases, however, it is associated with rheumatism, except in children under three years in whom rheumatism is an uncommon ailment, and in these young children pericarditis is most frequently the result of extension of inflammation from a pleurisy or a pneumonia.

Symptoms.—Quickened, tumultuous and uneven action of the heart is often the first symptom: this is soon followed by "*pain*," which may be precordial or referred to the epigastrium, abdomen or shoulder: the pain may be entirely absent or extremely acute: some tenderness to pressure or percussion over the precordium is nearly always present or, like the pain, it may be extreme. The pulse is quick, 120 to 130, and out of proportion to the temperature, which is not much raised (100°

to 101° F.); "this quickened pulse-rate, without adequate rise of temperature, is very characteristic of the sub-acute pericarditis of early life" (Cheadle).^{*} Anæmia increases; chorea, if present, becomes worse; dyspnœa is manifest, and varies with the amount of effusion. Nervous symptoms, such as headache, sleeplessness, and more or less delirium, are common.

Physical Signs.—The first sign of pericarditis is the pericardial murmur or friction sound. The friction sound is very variable in character; it may be like the creaking of new leather, or hard, rough, or grating. The patient should be examined in various positions, and often the sound is increased when the arms are raised above the head. Immediate auscultation will give the feeling that the sound is produced very near to the ear, and it is still audible if the ear be withdrawn a short way from the chest-wall. This superficial character of the sound is very important. The sound is usually double, and corresponds with the cardiac movements; it is heard well when the patient holds the breath and is increased during inspiration; it is not usually conveyed in the direction of murmurs. Friction sound may exist with a moderate effusion; but the rule is that it disappears as effusion takes place, and reappears as the fluid becomes absorbed. Pressure with the stethoscope may intensify the sound, or enlarge the area over which it is heard: it may alter its character, tone and pitch, or make it double when previously only single.

Cardiac dulness is increased laterally and vertically, when fluid collects in the pericardial sac in any quantity. When the effusion is considerable, the dulness is increased laterally and the edges of the lungs are pushed aside so that the entire sternum gives a dull note on percussion. The liver is depressed and a dull note is elicited in the right fifth intercartilaginous space. Rotch † insists on this last point as one of great importance in deciding between a dilated heart and a pericardial effusion; he says, "that while with a dilated heart partial

^{*} "System of Medicine," Allbutt, vol. iii. p. 44.

† "Pediatrics," vol. ii. p. 1047, *et seq.*

dulness may extend to the right of the sternum in the second and third interspace, it very rarely appears in the fifth, and absolute dulness never; even a small amount of effusion, on the other hand, finds its way into the fifth interspace causing absolute dulness." The lower angle of the pericardial dulness projects towards the right; the outer border of the right auricle is convex and passes downwards and inwards, the outer border of pericardial effusion on the right side is concave and passes downwards and outwards. The relation of the apex beat to the lower angle of dulness is important: in dilatation and hypertrophy of the left ventricle the apex beats *at the extreme left limit of the dulness and at its lowest level*, but in effusion the apex will be heard beating at a spot *inside and above* the boundaries of dulness. Owing to a relaxation of the ligaments between the left clavicle and the first rib, the clavicle is raised both at its outer and inner aspects, and in consequence of this the finger can be passed along the upper edge of the first rib as far as its sternal attachment; this is called "the first rib sign," and it may occasionally be found in great cardiac enlargement as well. The apex beat disappears from its normal position, and the cardiac impulse is in the fourth or third interspace. Sibson taught that this impulse was the actual apex-beat due to elevation of the heart by the effusion, but Balfour and Ewart believe that the impulse is not that of the apex of the heart but rather of its base. Dr. Balfour thinks that the true apex is pushed inwards by the effusion, and removed from the anterior wall. The heart sounds are always weak, often inaudible, over the region of the normal apex beat and for some distance upwards, but they become gradually more audible towards the base of the heart, where they may be well heard.

Dr. Ewart directs attention to a space just below the right mamma in the nipple line over which tubular breathing is heard: it may be heard only during expiration. Bamberger first described a patch of dulness about the size of a crown piece, which may often be found at the angle of the left

scapula and over which the signs are increased vocal fremitus, bronchial breathing and bronchophony or ægophony. If the patient bend well forward or assume the knee-elbow position for a few minutes, the dulness disappears and gives place to a tympanitic sound, while the signs of consolidation vanish or only some crepitant rales are heard; all the signs return when the vertical position of the body is resumed. Sansom* regards this as a valuable sign in children and young adults. Ewart† attaches great importance to a posterior pericardial patch of dulness at the base of the left lung; it takes the form of a square and extends outwards to nearly the scapular line and upwards to the ninth rib. In children pericarditis, like rheumatism, is generally sub-acute, the attack dying down and lighting up again without any very apparent cause; these recurring attacks of pericarditis produce very serious results; the pericardium becomes greatly thickened and its two surfaces so closely adherent that the action of the heart is greatly embarrassed; post-mortem the heart may be found enclosed in a tightly-fitting sac of fibrous tissue sometimes as much as one-eighth of an inch in thickness. The constitutional symptoms vary; the temperature is 101° to 103° F.; the pulse is quickened; dyspnoea is often present, and may be distressing if the effusion is considerable and has come on rapidly, and death may be very sudden at this stage: indeed, the advent of pericarditis where old cardiac mischief exists usually means the beginning of the end.

Diagnosis.—Before effusion takes place, the important signs are quick pulse, precordial pain, friction sound, and thoracic respiration. After effusion has taken place, the diagnosis must be made by careful attention to the physical signs.

Prognosis.—This is favourable if the heart is healthy; it is very unfavourable when it supervenes on old-standing heart-disease, and may cause sudden death.

Treatment.—Absolute rest in bed, and avoidance of excitement

* "Diagnosis of Diseases of the Heart," p. 159.

† "British Medical Journal," 1896, vol. i. p. 717.

and exertion of every kind, are the first essentials. The diet must be light and consist of milk and soups, and a few grains of calomel should be given.

Local.—If the pain is severe an ice-bag may be applied over the precordial region with a single layer of lint intervening between it and the skin. I have seen acute pain, dyspnoea and restlessness all promptly relieved by this means, and on the last occasion in which I used it the child fell into a quiet sleep. Care is required, however, in its use, and the medical man himself or an experienced nurse should pay constant attention to the pulse and temperature, as it readily depresses the heart. If the child is plethoric, a few leeches to the precordia will do good. Other modes of treatment are equal parts of extract of belladonna and glycerin painted on and covered with cotton wool; or spongiopiline wrung out of very hot water and sprinkled with laudanum; or equal parts of the liniments of aconite, chloroform, and belladonna, or sinapisms, or a small hypodermic of morphia.

General.—Give 5 grs. of salicylate of sodium with 20 drops of liquor ammonia acet. in syrup of orange and water every four hours, and at night 2 grs. of Dover's powder or 3 mins. of nupenthe to quiet the heart's action, relieve pain, and procure sleep. Tincture of digitalis or strophanthus and ammonia will be indicated where signs of cardiac failure or dyspnoea supervene, and stimulants, such as brandy or champagne in suitable quantities, will be called for. When the heart becomes greatly embarrassed, the pulse irregular, and syncope threatens, hypodermic injections of liq. strychninæ $\frac{1}{2}$ to 1 drop combined with five to ten drops of brandy may be given every four to six hours, and from $\frac{1}{2}$ to 3 drops of Tr. digitalis may be added; these are the most powerful remedies we possess of sustaining the failing circulation. When effusion has taken place and the temperature become normal, give iodide of potassium 5 grs., with 10 mins. of tincture of cinchona in syrup and water three times a day for a week or ten days, and then substitute the tartrate of iron for the cinchona in 5-gr. doses.

The iodide should be gradually increased. Mercurial ointment may be rubbed in night and morning.

If the effusion becomes extensive, the pericardium may require to be tapped. "The point selected is usually the fourth or fifth interspace, half-way between the nipple line and the left edge of the sternum. Always use that form of needle in which the trocar can be withdrawn when the pericardial sac is entered, and direct the needle upwards" (Ashby and Wright). Rotch advises the fifth right interspace close to the *sternum*.

ACUTE ENDOCARDITIS.—**Definition.**—Inflammation of the living membrane of the heart, which affects principally, and often exclusively, the valve segments of the endocardium (valvular endocarditis). There are two varieties of this affection: (a) Acute Simple Endocarditis, and (b) Malignant or Infective Endocarditis.

(a) Acute Simple Endocarditis.

Causes.—Rheumatism; chorea; scarlatina; measles; typhoid; diphtheria; or Bright's disease. Rheumatism is accountable for about 80 per cent. of all cases. Endocarditis is especially common between the ages of four and twelve years; and Steiner says that it is a useful rule in diagnosis to consider all heart-affections occurring under four years of age as of congenital origin.

Symptoms.—These may be slight or absent, and in rheumatism, chorea, scarlatina, and other affections with which endocarditis is known to be associated, the heart should be examined every day. Pain and dyspnoea are often present, the temperature rises to 101° or 102° F., the pulse is quick, small, and compressible; or dyspnoea on exertion may be the only symptom complained of: vomiting without apparent cause is not uncommon in children, but the most reliable symptom is the murmur which, in the great majority of cases, is heard best at the apex, is systolic in time, and conveyed towards the axilla and also towards the sternum: this murmur is in some cases preceded by a faint murmur heard at the tip of the

ensiform cartilage indicating a slight degree of tricuspid regurgitation: it is important to remember that endocarditis may exist without a bruit being heard, and we should suspect its presence in a case of rheumatism in a child, when the heart sounds become veiled, or impure, or palpitation and oppression of breathing are complained of. This form of endocarditis is very liable to relapse, coming and going for an indefinite time, and these relapses are usually associated with manifestations of rheumatism, such as a fresh return of the joint-trouble, a new crop of fibrous nodules, or an eruption of erythema. Anæmia is a constant accompaniment of endocarditis in children, and often advice is sought on account of the pallor alone.

(b) **Malignant or Infective Endocarditis**, called also ulcerative endocarditis. This form of endocarditis may supervene in a child already suffering from rheumatic heart disease, and it is known also to arise during the course of pneumonia, post-scarlatinal nephritis, or the eruptive fevers, and in association with pyæmia or septicæmia. The already damaged valves are invaded by micro-organisms carried from some infective area, such as pneumonia, abscess of the brain, a typhoid ulcer or a suppurating bone. The organisms which are most frequently the cause of the disease are the streptococci, the staphylococci and the pneumococci.

Symptoms.—The onset is usually insidious; the general constitutional symptoms become more marked and are those of septicæmia engrafted on to heart disease. The temperature rises to 103° or 104° F., and chilliness or rigors may appear, followed by sweating. There is usually precordial pain: the spleen is often enlarged and tender from embolism, and the urine is albuminous. Should the aortic valves become involved, and especially should right-sided valvulitis arise, we would be justified in considering the case as being one of malignant endocarditis. The course of the disease is as a rule chronic, the symptoms assuming a low typhoid type, but occasionally it may occur in an acute form and run a rapid course.

CHRONIC HEART-DISEASE.—As has been said, the symptoms pointing to the heart may be very slight or absent at first, but after a time, when the rheumatism has passed off, the regurgitation at the mitral orifice begins to assert itself. The earliest symptom now is breathlessness on even slight exertion; anæmia is soon noticed; and palpitation is seldom absent. The physical signs are murmur heard at the apex which is well conducted towards the axilla; it is also heard at the angle of the left scapula. The apex beat is diffused and situated outside the nipple line. The area of cardiac dulness is increased to the left, and, in some cases, to the right as well. Hæmorrhage from the nose (epistaxis) is often seen, and hæmoptysis is common in mitral stenosis. These patients often suffer from bronchial catarrh, the result of pulmonary congestion caused by the regurgitation. Embolism occasionally occurs. After a time the heart may attain an enormous size, so that the area of cardiac dulness extends from nipple to nipple, and the whole of the preeordial region is bulged forwards. The left bronchus may be pressed upon, and cause collapse of the base of the left lung, and later congestion and enlargement of the liver, congestion of the kidneys, with albuminuria and advancing dropsy, dyspnoea and bronchitis, bring about a fatal issue. Attacks of dyspnoea or orthopnoea, with pain resembling angina pectoris, are not uncommon towards the last. These cases may be very chronic, and it is surprising how some children improve under treatment from conditions which looked very hopeless. The cardiac lesions occur in the following order of frequency: (1) mitral regurgitation; (2) mitral regurgitation with mitral stenosis; (3) mitral stenosis alone; (4) aortic obstruction and regurgitation combined; (5) aortic obstruction; (6) aortic regurgitation, very rare.

Prognosis.—If a mitral murmur be unaccompanied by signs of hypertrophy or dilatation, it may ultimately disappear. If accompanied by hypertrophy, the valvular lesion will not get better. Serious breathlessness, lividity on exertion, marked anæmia, and loss of flesh are bad signs. The prognosis is in relation to the nature of the heart-lesion.

Ulcerative or malignant endocarditis is very fatal.

Treatment.—The treatment of acute endocarditis must be the same as that given under pericarditis, which see: when the acute symptoms subside and the disease becomes chronic, the child must be carefully guarded against the effects of cold, and for this reason flannel should be worn next the skin. Excessive exercise must be forbidden, such as rough games, cycle-riding, and gymnastics, and the diet should be of the most nourishing kind and easily digested. When palpitations, breathlessness, and anæmia begin to cause trouble, digitalis should be given, and Dr. Eustace Smith's* prescription at this time is 1 dr. each of infusion of digitalis, senna, and calumba, three times daily to a child ten years old. If the anæmia is marked, he gives 4 or 5 grs. of the exsiccated sulphate of iron in glycerin after each meal. When dropsy sets in, diuretics must be given, and a valuable one at this time is the tincture of cantharides, five drops three times daily. Acetate or citrate of potassium or iodido of potassium with tr. digitalis, tr. scillac and spt. eth. nit. make a useful combination. Diuretin in 5 to 10 gr. doses, combined with digitalis, is highly spoken of. At the same time the bowels should be freely opened with calomel, followed by suitable doses of one of the purgative waters, such as Apenta, or hunyadi janos. It is most important that a fair amount of sleep be obtained in these cases, and a few grains (two or three) of Dover's powder or a few drops of nepenthe at bedtime may be given, or a little hot gin punch at bedtime is often effective. Stimulants should be at hand, and given if signs of cardiac failure arise. Their use should be supplemented with digitalis, ammonia carb. spt., ammon. aromat., or ether. Hypodermic injections of ether or strychnine may be resorted to as a last resource.

Many drugs have been used in the treatment of malignant endocarditis; quinine alone in large doses or combined with arsenic; benzoate of sodium; sulphocarbolate of sodium;

* On "Disease in Children," 3rd edit. p. 553.

salicylate of sodium; antipyrin, or phenacetin are a few of these, but none of them seem to have much influence on the disease. Concentrated nourishment, stimulants, tonics, and rest are more likely to prove useful. The subcutaneous administration of the antistreptococcic serum has lately been recommended, and should have a trial.

CONGENITAL HEART-DISEASE.—**Causes.**—(1) Persistence of one or other of the foetal openings, notably the foramen ovale. (2) Intra-uterine endocarditis. This usually affects the pulmonary or tricuspid valves; the aortic and mitral are less often affected. As a secondary effect is found a patent foramen ovale or ductus arteriosus, or the septum between the ventricles may remain open. (3) Anomalies of development, as absence or imperfection of the septum ventriculorum or transposition of the great vessels.

Symptoms.—1. *Patent Foramen Ovale.*—This allows of the passage of blood from the right to the left auricle, and is caused by repeated attacks of bronchitis preventing the valve closing. There is a loud systolic murmur heard at the base, both in front and behind.

2. *Intra-uterine Endocarditis.*—If it occurs early in foetal life, it usually affects the pulmonary and tricuspid valves; if it occurs late in foetal life, it usually affects the aortic and mitral valves. Cyanosis is mostly present, and is increased by exertion or coughing. There is a loud rasping systolic murmur heard over the pulmonary area, which is not transmitted round to the back, and there may be epigastric pulsation, pointing to dilatation of the right ventricle. This is the commonest form seen in those who have survived infancy and childhood. Affections of the pulmonary valves constitute 85 per cent. of all cases of congenital heart disease which reach the age of twelve years or upwards.

3. *Patent Septum Ventriculorum.*—This may be caused by obstruction at the pulmonary orifice. The left ventricle becomes greatly enlarged and hypertrophied in its efforts to carry on the circulation. There is a loud rasping systolic

murmur, heard best at the lower end of the sternum, and conducted both towards the axilla and round to the back.

The most prominent symptom of congenital heart-disease is *cyanosis*. This, which is seen in 90 per cent. of the cases, signifies lividity of the skin from the circulation of imperfectly aerated blood in the superficial capillaries. So distinctive is this symptom of congenital heart-disease, that the term "morbus cœruleus" has been applied to it, and in the same sense "the blue disease" or "blue babies." The lividity is best seen in the cheeks, lips, eyelids, and the tips of the fingers and toes. The external temperature is reduced, and these children complain of feeling cold. Dyspnœa and cough are common. Clubbing of the fingers and toes is seldom absent, and convulsions are not rare. These children are very drowsy, and sleep a great deal; they are usually feeble and backward in growth.

Prognosis.—This is very unfavourable. The more marked the blueness, the worse is the prognosis.

Treatment.—This must be largely hygienic. Fresh air, the avoidance of cold and of all conditions liable to induce bronchial irritation, with a carefully regulated and easily assimilated diet, constitute the most essential elements. An occasional mercurial purge is useful, and the child should be clad in flannel from head to foot; a little additional warmth over the abdomen, by means of a pad of cotton wadding, is desirable. For medicines, digitalis comes first, used cautiously; iron and strychnine are useful remedies. Sir Walter Foster speaks highly of peroxide of hydrogen, given in 8-min. doses three times daily. Stimulants will be called for, and brandy is the best. Complications, such as dropsy, must be treated on general principles.

CHAPTER X.

DISEASES OF THE BLOOD.

ANÆMIA.—In all forms of anæmia in children, it is important that an examination of the blood should be made, in order to determine (*a*) the amount of hæmoglobin present; (*b*) the number of the red and the white corpuscles; (*c*) the size, shape, and colour of the red corpuscles. The hæmoglobin in healthy children should be 85 to 95 per cent.; the red blood corpuscles should be five millions to the cubic centimetre, and the white blood corpuscles 8000 to 9000 in childhood, and 12,000 to 13,000 in infants under one year.

1. **SIMPLE ANÆMIA.**—The subjects of this affection are bloodless-looking children, and they are languid and easily tired; murmurs are common at the base of the heart and in the neck; there are no hæmorrhages, no albumen in the urine, and no enlargement of the spleen. The condition is well seen in the mucous membranes of the gums, lips, and eyes; it sometimes seems to run in families. The red blood corpuscles are diminished, but there is no corresponding increase in the white corpuscles. Such children are very apt to develop tubercle.

2. **ANÆMIA WITH ŒDEMA.**—In infants and children under two years who are anæmic, it is very common to find them more or less swollen over the body, but it is best seen in the back of the hands and feet. Such cases are often very puzzling, as examination shows the urine to be free from albumen, and the heart to be healthy. In these cases, a history of diarrhoea or some other lowering disease will generally be forthcoming, the condition being due to the drain on the system and the impoverished state of the blood, or it may be caused by some toxins or peptones which have become absorbed

from the alimentary canal. In this form of anæmia the spleen is not enlarged.

3. SPLENIC ANÆMIA, OR ANÆMIA SPLENICA.—This is a condition of profound anæmia, together with great enlargement of the spleen. It is seen in children up to two years of age, rarely after the second year, and is most likely caused by congenital weakness, chronic disorder of the digestive organs, improper feeding, and insanitary conditions. Syphilis is present in a certain number of cases, and evidence of rickets is rarely absent.

The symptoms are profound anæmia, seen well in the mucous membranes, and on palpation the spleen is found to be enormously enlarged, and extending to or below the umbilicus. Catarrhal affections of the respiratory and gastro-intestinal tracts are not uncommon. There is no albumen in the urine, and no hæmorrhages except towards the close. There is often a hectic temperature.

The spleen, on *post-mortem* examination, is greatly enlarged, firm, and hard, and the microscope reveals nothing but simple hypertrophy. The red corpuscles are diminished, but there is no absolute increase of the white corpuscles; the hæmoglobin is often reduced in amount to thirty per cent.

Treatment.—All these forms of anæmia will require careful regulation of the diet, an abundance of pure air, and warm clothing next the skin. Having attended to these points, iron, arsenic, and cod-liver oil should be given in doses suited to the age and strength of the child. Complications arising from catarrh of the bronchial or gastro-intestinal tract should be guarded against, or promptly treated on general principles.

4. Idiopathic or Pernicious Anæmia.—This is seen in children, but from what cause is not known; in some cases there is a history of very improper feeding and privation.

Its symptoms are the same as in the adult—weakness, pallor, and shortness of breath, coming on without cause. Digestive troubles are very common, and diarrhœa, alternating with constipation, is often troublesome, and comes on in spite

of the most careful regulation of the diet. The anæmia is very evident; there may be slight pyrexia; and purpuric and retinal hæmorrhages, with optic neuritis, are sometimes present. The course is often acute—from one to three months. Examination of the blood, when the disease is advanced, shows a very marked diminution of the red blood-corpuscles, without increase of the white corpuscles, or these latter may be diminished in number; in other words, there is no leucocytosis.

Treatment.—Rest, bodily and mental, and the best hygienic surroundings procurable are important. A change to the country or seaside is useful. Milk, vegetables, and farinaceous foods are more grateful, as a rule, than beef and other nitrogenous substances. When they can be taken, raw meat or meat juice and bone marrow may be tried. Claret or burgundy with the meals should be given. For drugs, arsenic is the best, given in increasing doses. Iron and phosphorus, with cod-liver oil, may be tried. Antiseptics, such as salol, B-naphthol, or salicylate of bismuth, have been given with apparent success. Transfusion of blood has been tried with excellent results by Quinke and others, and should be resorted to early in the disease.

5. Anæmia Lymphatica, Hodgkin's Disease, Adænia, or Lymphadenoma.—These are the names applied to a disease characterized by enlargement of groups of lymphatic glands, together with enlargement of the spleen, progressive anæmia, and hectic fever. The etiology of this affection is very obscure, but it has been noticed to follow blows on the head or neck, suppuration of an ear, abscesses in the neck, etc. It is more common in the male sex, and syphilis may be present in a small percentage of cases.

Symptoms.—These are slight fever, wasting, anæmia, and dyspnœa, but the first thing that attracts attention is the enlargement of the lymphatic glands, usually in the neck; next those in the axilla; and lastly the glands in the groin. With the enlargement of the glands there is found considerable increase in the size of the spleen. One very striking

character of these enlarged glands is that they remain isolated from, and freely movable upon, one another; they are not attached to the skin; and they are neither painful nor tender. The temperature is of the intermittent type, and may remain at 103.5° F. for some days together. The anæmia becomes marked, and the child is very weak. Later, any glands in the body may become affected, such as those in the mediastinum, giving rise to pressure symptoms on the trachea or large veins. The course of the disease is chronic, and leads to a fatal issue from increasing exhaustion. After death, the spleen is found enlarged and infiltrated with adenoid tissue; the lungs, liver, and kidneys are also infiltrated, only in less degree.

Diagnosis.—If the enlarged glands vary in size from time to time, and are accompanied with pyrexia of an intermittent type, lymphadenoma should be suspected; if the spleen becomes enlarged at the same time, or shortly after, it points strongly to Hodgkin's disease. If the glands show a tendency to suppurate, they are probably tubercular, and Bireh-Hirshfeld points out that in lymphadenoma there is a certain amount of elasticity in the feel of these glands, as compared with the board-like hardness of the cheesy gland.

Treatment.—Improve the general health as much as possible by good food, sound sanitary conditions, cod-liver oil, and iron. Arsenic and phosphorus are the two drugs most relied on; the former may be given freely to children. Iodine either as the tincture or pot. iodide has been frequently used, but care is required on account of its tendency to depress. Gland extract, such as that of the thyroid, thymus, spleen, or lymphatic glands, is under trial, and bone-marrow is recommended by Professor Frazer.

Local measures, such as counter-irritants, are not of much, if any, service, and the injection of various solutions, such as of iodine, carbolic acid, silver nitrate, or chromic acid, is painful, and the inflammation excited may prove troublesome. The application of small blisters is allowable. If seen in an early stage, and when the disease is localized, the enlarged glands

should be removed. The most suitable cases for operation are those in which the enlargement is confined to one group of glands, in which the spleen is not enlarged, and in which there is neither fever nor well-marked anæmia.

6. Leucocythæmia, or Leuchæmia, is a rare disease in children, though it may occur at any age. Its etiology is obscure, but privation, insanitary conditions, malaria, and syphilis no doubt predispose to it. In many cases the earliest sign is enormous enlargement of the spleen, which may extend as low as the iliac crest, and which is often tender to the touch or gives rise from its great size to a dragging sensation or pain in the left hypochondriac region. In others weakness, breathlessness on exertion, or gastric symptoms are first complained of. Slight irregular pyrexia at night may be accompanied by sweatings, and vomiting and diarrhoea from time to time are not infrequent. Hæmorrhages are common at some period of the disease, and of these epistaxis is the most frequent. Examination of a drop of blood establishes the diagnosis, as the white corpuscles are greatly increased in number; normally, there should be one white corpuscle to 250 or 300 red ones, but in this disease the proportion of white corpuscles to red ones varies from 5 to 50 per cent.

Prognosis.—This disease is, in the great majority of cases, fatal.

Treatment.—Improved hygienic surroundings and removal from malarious districts to a healthy seaside resort should be early insisted on; rest is important, and fatigue from any cause should be avoided. The clothing should be warm, and chills or wettings guarded against. The diet should be as full and nourishing as the patient can cope with, and everything likely to lead to gastric disturbance avoided.

Arsenic is the most valuable drug, and should be given in small and increasing doses, and pushed as far as possible.

Quinine in large doses may be tried, especially in cases giving any history of malaria.

Phosphorus, 1 drop of the oil on sugar three times daily may be tried.

Iron and cod-liver oil may be given. Bone marrow and raw-meat juice have recently been advocated, but without much benefit. Transfusion of blood and the inhalation of oxygen occasionally seem to be of use.

The spleen has been treated locally as follows: by electricity, by injecting arsenic or ergotine into its substance, by counter-irritants applied over it, such as blisters, iodine liniment, or the red iodide of mercury ointment, and finally by removing the organ by excision; but in the advanced stage of the disease all remedies alike prove worthless.

SCURVY.—**Causes.**—Bad and insufficient food, especially the want of fresh milk, fresh meat, and fresh vegetables. In babies, excess of starchy food and bodily neglect, coupled with the constant breathing of close, foul air. Attacks of gastric disturbance, such as vomiting and diarrhoea, greatly favour the outbreak of scurvy. Dr. Cheadle believes that children who become affected with scurvy have been brought up on a diet deficient in fresh milk, or upon an exclusive diet of one or other of the proprietary preserved foods; or upon condensed or peptonized milk, or milk that has been overheated or sterilized. He further writes * that, "In accordance with the fact that the majority of cases of scurvy occur in children fed upon patent foods and peptonized and other forms of prepared milk, comes out another curious fact, namely, that the disease is met with chiefly amongst the children of the better class. Although the children of the poor are by no means exempt, the disease is much less common amongst them than amongst the children of the well-to-do."

Symptoms.—These are seen, in the large majority of cases, in the period between six and eighteen months, but most frequently towards the end of the first year. Anæmia is a striking symptom, and though such babies are often fat-looking, they are very soft and flabby; the gums are spongy, and bleed on the slightest touch. The child is very tender to the touch and cannot be handled, so that it cries violently when being washed

* Allbutt, "System of Medicine," vol. v. p. 616.

or dressed, although it may be quiet and contented when left at rest. Very often one or other thigh is swollen, or the forearm just above the wrist, so that, in dread of any movement, it lies with the limbs perfectly still, as if paralyzed. This extreme dread of touch and movement, with the quasi-paralytic stillness of the limbs, are together very characteristic and almost of themselves diagnostic. Purpuric spots and extravasations into the skin are common; the teeth become loose and fall out, and the breath is highly offensive. Hæmorrhage from the nose, kidneys, or bowels is common; and occasionally proptosis of one eye, with discoloration of the upper lid and redness of the conjunctiva, appears, which is due to hæmorrhage under the periosteum of the orbit.

The temperature is normal or subnormal in the absence of complications. The appetite is poor; diarrhœa is common, and profuse perspirations are noticed. Weakness increases and becomes extreme.

Morbid Anatomy.—There are large extravasations into the tissues, especially of the thighs and forearms; the muscles are pale, and the bones are atrophied. Extravasation does not take place into the joints, as it does in hæmophilia. The abdominal and thoracic organs are usually healthy.

Treatment.—Give fresh cow's milk diluted with barley-water according to the child's age; meat-juice, raw pounded meat or raw pounded mutton may be given, and plenty of orange or lemon-juice, or finely pounded potato; abundance of fresh air and stimulants will be useful. The state of the mouth should be looked to, and cleanliness enjoined. Salt water or borax-water makes a good wash, and the gums may be painted with glycerin of tannic acid. When convalescence has set in, iron, cod-liver oil, and change of air to the seaside improve matters very quickly.

PURPURA.—This affection was first described by Werlhof in the year 1775, and is often called "Werlhof's disease." There are three varieties: (1) *Purpura simplex*; (2) *Purpura hæmorrhagica*; and (3) *Purpura rheumatica*. In the first the hæmorrhages take place beneath the skin only; in the

second, they take place from the mucous membranes as well as under the skin; and in the third, they are associated with symptoms of rheumatism.

Causes.—Insanitary conditions and insufficient food; it may come on after typhoid, diphtheria, scarlatina, or pneumonia. Iodide of potassium may induce it, and it is more common in girls than in boys.

Symptoms.—In *Purpura simplex* the eruption may appear without any previous signs of sickness, or it may be preceded by slight fever, pains in the limbs, thirst, etc. The spots are circular, and of a brick-red or deep purple colour, not elevated, and not disappearing on pressure; they vary in size from a pin's head to half an inch or more in diameter. The spots are often associated with bruise-like marks due to subcutaneous extravasation, and these marks may be noticed to follow the slightest contusions. The spots come out in crops, and are most numerous on the limbs.

In the hæmorrhagic variety, in addition to the spots, the nose bleeds, and there may also be bleeding from the mouth, ears, lungs, stomach, kidneys, or bowels. In many of these cases, also, this form of the disease is accompanied with abdominal symptoms, such as vomiting, severe colic, and intestinal hæmorrhage, with purpuric spots on the skin and arthritic swellings; this type of purpura is known as "Henoch's disease." Renal hæmorrhage is the most common one, and though the naked-eye signs of blood may not be present in the urine passed, the microscope will reveal blood-corpuscles. It should be borne in mind that hæmorrhage may take place on the surface, or into the substance of the brain or spinal cord in these cases, and give rise to cerebral or spinal symptoms.

When swelling and pains in the joints are complained of, the affection is called "*purpura rheumatica*" or "*peliosis rheumatica*." In some cases the pains may be those of true rheumatism, but they are most likely due, in the majority of cases, to slight bleedings into or around the joints; the pains remain longer in one place than is usual in the rheumatism of

children, and Baginsky says that "heart complications do not occur." The course of the disease is very irregular; there is generally anæmia and confined bowels; the ankles may get puffy; and headache is often complained of. In severe cases meningeal hæmorrhage may occur, giving rise to convulsions, or the child may die from syncope or exhaustion. As a rule, the temperature is not raised in cases of purpura simplex, but occasionally there may be slight feverish symptoms for a day or two before the spots appear. In the hæmorrhagic variety, on the other hand, there may be high fever— 104° F.—with copious and repeated hæmorrhages from mucous surfaces. These cases may run a very rapid course, and end fatally in a few days. In *Purpura rheumatica* the temperature is generally moderately elevated— 100° to 101° F.—and seems to depend upon the amount of joint trouble present.

Prognosis.—This is favourable in the large majority of cases, but the disease may be very acute, and death take place rather suddenly from syncope or convulsions.

Treatment.—In the simple variety confinement to bed will not be necessary, and the child may be allowed to move about quietly. Iron and arsenic should be given (see R 25). In purpura hæmorrhagica rest in bed is essential, and Professor Whitla advises that the air of the patient's apartment should be saturated with the vapour of turpentine, and turpentine should be given internally; it is most readily given in capsules, if the child can swallow them, or it may be given in emulsion form (see R 24). Should the bleeding persist, ergot must be given either internally or by hypodermic injection; and if this fails, acetate of lead, alum, tannic or gallic acids, or hazeline may be tried. Dr. Wright,* of Netley, recommends chloride of calcinm, in 5-gr. doses, every four hours. Poulet has reported good results from nitrate of silver given with a crumb of bread, $\frac{1}{10}$ gr. twice daily, and Professor Whitla † reports rapid improvement in a severe case after its use.

* *Lancet*, vol. ii., 1897, p. 1061.

† "Dictionary of Treatment," 3rd edit. p. 788.

When the hæmorrhage has been controlled, tonics should be given, and especially strychnine and iron. A good combination at this time is Easton's syrup 10 to 20 drops three times daily after food. The food should be nourishing and easily digested; the clothing should be warm, and an abundance of fresh air is important.

HÆMOPHILIA.—This is a congenital tendency to bleeding, which shows itself shortly after birth and continues through life. There may be a distinct cause for the starting of the bleeding, or it may come on without apparent cause, and the difficulty experienced in stopping the hæmorrhage, even from the scratch of a pin, is characteristic.

The males in a family suffer far more than the females, and a peculiar point about the affection is that the tendency is transmitted through the mother, although she herself escapes.

Symptoms.—These generally show themselves about the time the child begins to creep about, when the slightest knock or bump is promptly succeeded by an ecchymosis. If the hæmorrhage be spontaneous, it is usually from the nose, gums, cheeks, or lips. In children towards puberty, it is from the stomach, bowels, or kidneys, and the bleeding proves most obstinate. The bleeding is a capillary oozing. The following case was under my care in the Children's Hospital, and is a good example of this disease:—

J. T., aged eight years, was admitted suffering from epistaxis of eight days' duration; the mother supplied the following history. A tendency to bleed was first observed when he was fifteen months old, at which time a large ecchymosis formed on his forehead, the result of a slight blow; in his second year he fell on his chin, nipped his tongue, and from this he bled for eight days until exhausted; five months after this he knocked his knee—the joint swelled to a great size and became black; six months after this he knocked his knee again, and the same condition ensued. A year after this he cut one of his fingers, and it bled for six days in spite of treatment. Two years after this he knocked his right elbow, which swelled

and turned black as his knee had done. Three months after this his nose began to bleed without cause, and bled for six days, until he was exhausted. Six months after this he plucked out a loose incisor tooth, and bleeding followed for seven days; and finally, nine months after this, his nose again began to bleed, and had been doing so more or less for the week previous to his admission into the hospital.

A curious feature is the joint affection, which is common; the larger articulations (and chiefly the knee-joint) are noticed to be swollen and tender, and the temperature is raised; there is fluctuation in the joint, the lesion being due to articular hæmorrhage; it may be spontaneous or the result of a blow. The most dangerous of all hæmorrhages, and those most to be dreaded in this disease, are those into the brain or spinal cord. They may follow a blow or a knock, or arise spontaneously. They are generally speedily fatal. These children pass through the exanthemata without manifesting unfavourable symptoms, and chest affections are not attended with special dangers.

Prognosis.—This is always serious, and the bleedings most to be dreaded are those from the nose, after the extraction of a tooth, or into the brain or spinal cord.

Treatment.—Protect from all injuries, and especially avoid extracting teeth. The bowels should be carefully regulated, and constipation guarded against. The diet should be light, easily digested, and nourishing, white flesh being preferred to much butcher's meat; all flesh meat should be stopped if hæmorrhage threatens, and a mercurial purge, followed by a saline, given. Gentle exercise in the open air is useful, but violent games are better avoided. Warm clothing next the skin is essential. The administration of astringents in this disease is generally very disappointing; iron in large doses combined with chlorate of potassium may be tried, or one or other of the many astringent drugs. Chloride of calcium is supposed to increase the coagulability of the blood, and should be tried. The regular inhalation of oxygen gas has recently been followed

by marked benefit. Transfusion of blood may be resorted to as a last resource. In superficial wounds and abrasions, Dr. Bienwald* has succeeded in arresting the bleeding by the application of blood obtained by aspiration from a healthy subject, and which he deposited on the wound; he says in a few seconds it coagulated, and the hæmorrhage at once ceased.

CHAPTER XI.

DISEASES OF THE NERVOUS SYSTEM.

TETANY.—This name is given to a rare and peculiar neurosis, characterized by tonic spasms of the muscles of the extremities; it is also called Tetanilla, and Tonic contraction of the extremities.

Causes.—*Age.*—Is most common from six months to the end of the second year. *Sex.*—More common in males than in females; improper feeding, which gives rise to gastro-intestinal derangements and diarrhoea; exposure to cold and wet and bad hygienic surroundings; the irritation of teething and worms; the passage of uric acid calculi, or during attacks of pneumonia and typhoid. In young children, evidences of rickets are rarely wanting, and it is then often associated with laryngismus stridulus and eclampsia. Kassowitz† has never seen tetany occur with gastro-intestinal catarrh in the absence of rickets, and the close relationship of tetany to rickets is explained by the rachitic affection of the skull, which produces hypertrophy not only of the cranial bones, but also of the meninges and cortex, and so causes undue excitability of the motor centres and a tendency to convulsive seizures. He says the exciting cause of the spasms is some noxious substance entering by the respiratory tract from the foul air in the dwellings of the poor.

* *Lancet*, July 10, 1897.

† *British Medical Journal*, Epitome, May 1, 1897.

Dr. Dawson Williams* writes: "The most acceptable theory of the pathology of tetany is that, under certain conditions of gastro-intestinal derangement, among which *gastric dilatation* is probably the most important, toxic substances are produced, which, when absorbed, affect the central nervous system. Degenerative changes, probably of inflammatory origin, have been found in some cases in the cells of the anterior horns of the grey matter of the spinal cord (internal part).

Symptoms.—The disease sets in with tingling or burning sensations, followed by tonic contractions of the hands and feet. The hand is strongly flexed at the wrist, and the thumb inverted into the palm, the fingers covering the thumb tightly. The foot is strongly extended, and the toes flexed, the whole assuming the aspect of talipes equino-varus. The knees are often semi-flexed, and the thighs adducted. The contractions are painful, and any attempt to extend the joints gives rise to loud crying. The spasms intermit, but they usually last from a few days to two weeks. In severe cases, the muscles of the forearm and calf are affected, and Dr. Cheadle has noticed the muscles of the face to be involved. In these also there is little remission of the rigidity, and it persists during sleep and chloroform anæsthesia. Sensation is not affected; the reflexes are normal; the temperature is normal; and intelligence is not interfered with. Trousseau first pointed out that in tetany —

(a) Pressure exerted upon the large vessels and nerves of the limb would produce a paroxysm of tetany.

(b) There is very greatly increased electrical excitability in the motor nerves of the body and limbs, so that very weak currents are sufficient to excite muscular contractions.

(c) A slight tap upon the trunk of a nerve is often sufficient to arouse a paroxysm, even though the muscles themselves cannot be thus thrown into contraction by direct percussion. These are sometimes called Trousseau's phenomena.

In order to demonstrate this excessive irritability in tetany, the finger may be passed smartly over the angle of the mouth,

* "Medical Diseases of Infancy and Childhood," p. 505.

when the levator promptly contracts, or the outer side of the orbit may be treated in a similar way, when the orbicularis contracts. This is known as the "facial phenomenon," but it is not peculiar to tetany.

Diagnosis.—From cerebro-spinal meningitis, by the absence of fever, vomiting, and cerebral symptoms.

From tetanus, by the absence of fever, and the spasm of the masseters, which is an early symptom in tetanus.

Prognosis.—Favourable ; it rarely endangers life.

Treatment.—Remove the cause, such as by lancing inflamed gums, expelling worms, rectifying gastro-intestinal troubles, and relieving constipated bowels; warm baths and hot laudanum fomentations may be used, and internally chloral and bromide of sodium may be given either by the mouth or by the bowel. Belladonna is also a useful drug in this affection, but it must be given with a free hand. At the same time intestinal antiseptics, such as calomel in small doses (gr. $\frac{1}{10}$), salol, benzo-naphthol, naphthalin, or salicylate of bismuth, should be given in doses suited to the age of the child. Maestro has reported three cases in which recovery quickly followed the administration of thyroid gland in gradually increasing doses. Dr. Cheadle reports a most obstinate case cured with Calabar bean, beginning with $\frac{1}{30}$ gr., and gradually increased up to $\frac{1}{8}$ gr., and later to $\frac{1}{3}$ gr. three times daily. The inhalation of chloroform, ether, or nitrite of amyl may be resorted to in obstinate cases, and galvanism with the anode on the nerves may be tried. When the disease has subsided every effort should be made to improve the general health, such as an abundance of fresh air in conjunction with cod-liver oil and iron tonics. Cold sponging in the morning, followed by vigorous rubbing, will be useful, and phosphorus may, with advantage, be added to the cod-liver oil for the rickets, which is generally present.

TETANUS NASCENTIUM is characterized by intense irritability of the spinal cord and motor nerves.

Causes.—This disease in infants is just the same as tetanus

in the adult, and is caused by the inoculation of the navel with the specific bacillus of Nicolaier. The bacillus multiplies in the vicinity of the navel, and produces a strychnine-like poison which is absorbed into the system and gives rise to the muscular spasms.

Symptoms.—These begin from the fifteenth hour to the fifteenth day after birth; generally on the third, fourth, or fifth day, rarely later than the tenth. The first thing that is noticed by the mother is that the baby cannot suck, and, if the mouth is examined, it will be found more or less firmly fixed from spasm of the facial and jaw muscles. The contractions soon become general, and extend to the muscles of the neck, back, and limbs; they come on in paroxysms, last a variable time, and in the majority of cases there is no complete relaxation. The interval between the paroxysms becomes shorter and shorter, and death ends the scene in a day or two, being preceded by rapid emaciation and often by jaundice. This form of tetanus is often called “nine-day fits.”

Diagnosis.—This disease can hardly be mistaken. Remember that it begins in the muscles of mastication, and gradually spreads to those of the neck and trunk.

Prognosis.—It is nearly always fatal.

Treatment.—To prevent the disease, scrupulous cleanliness should be observed in dressing the navel.

When it has set in, all sources of irritation, whether external or internal, should be removed. The child should be placed in a darkened and quiet room, and a dose of calomel or castor-oil, or a copious enema, given. Regular feeding is essential, and if the baby cannot swallow, or any attempt to do so brings on the spasm, put it under chloroform, and introduce the nourishment through a catheter passed into the œsophagus. In this way 3 or 4 ozs. of ass’s milk, or equal parts of cow’s milk and barley-water, may be administered. Chloral may be given mixed with the milk in 2-gr. doses, and seems to be the best drug. Many other drugs, such as opium, belladonna, bromide of potassium, cannabis indica, have been used; and

the hypodermic injection of extract of calabar bean (gr. $\frac{1}{2}$ dissolved in η x. of water) has proved of use in some cases; warm bottles and spinal ice-bags are worth trying, and, if the spasms become severe, chloroform will always relieve them. Recently the injection of the tetanus antitoxin has been followed with success. At the present time 8 c.c. of the antitoxin is considered a full dose for a small child, which could be repeated if necessary.

CONVULSIONS. — **Causes.** — *Predisposing.* — Hereditary neurotic tendency; rickets; anæmia; exhaustion from any cause.

Exciting. — Peripheral irritation, such as burns, scalds, or wounds, or a pin in the clothing that jags; irritation in the alimentary tract by indigestible articles of food, hardened masses of fæces, or worms; dentition; ear-ache, or a foreign body in the ear; retention of urine; sudden chill when the body is heated; frights; congestion or anæmia of the brain; the poison of measles, scarlatina, small-pox, uræmia, or malaria. Convulsions are also common in all affections of the brain and its membranes.

Symptoms. — Convulsions may come on suddenly and without warning, or be preceded by nervous phenomena. They may be general or affect only a small group of muscles, as one limb, or there may be twitchings about the mouth and eyelids.

Usually the movements are general, and affect both sides; the eyes are always involved, and turned upwards. The beginning of a fit is often marked by spasm of the glottis; the face becomes pale, the eyes are turned up so as to show "the whites;" the legs and arms are stiff and extended, the hands are clenched, and the neck and back are stiff and arched. This tonic stage is succeeded in a very short time by the clonic stage, when the hands, arms, feet, and legs, and the muscles of the face begin to contract spasmodically, and the child is said *to be working* in convulsions. This stage may last a variable time according to the severity of the attack, but usually after a few minutes the contractions subside, and the fit is at an end. Vomiting, or the passage of urine and

faeces, is often noticed towards the end of a seizure. Should convulsions recur at frequent intervals, some mental defect is generally present. Sound sleep, as a rule, follows the attack, and the child may be depressed or drowsy for a day or so; occasionally some loss of motor power in a limb is noticed if the seizure has been severe, but this passes off unless some severe central lesion is present.

Diagnosis.—In every case make careful search for signs of disease of the brain or its membranes. If the child be young and well nourished, the attack is likely to be reflex; if the child be wasted and weakly, general tuberculosis or tubercular meningitis is to be dreaded. If the attacks recur at regular intervals, they are almost certain to be due to a central lesion, and are often followed by mental weakness or idiocy. Paralysis remaining after the fit points to the cause being central; so do squint, drowsiness, and contractures.

Prognosis.—This is good where the cause is reflex; it is very bad where the cause is central.

Treatment.—If the cause is reflex and the child robust, place it in a warm bath and pour some cold water over the head. If the temperature is high, add cold water or ice to the bath, to cool it rapidly. If the cause is central, the bath will do no good, and may do harm. If there is an overloaded stomach or bowels, give an emetic in the one case, or a purgative in the other. Lance the gums if they are tense, and, if the attack persist, give a whiff or two of chloroform or nitrite of amyl. Baginsky recommends the application of a few leeches to the scalp. Bromide of sodium or strontium and chloral should be given for a few days after the attack, and the following is a good prescription at this time: *R* Ammon. bromidi, gr. 48; spt. etheris nitrosi, ʒ ii.; chloral hydratis, gr. 12; syr. aurantii flor. ʒ ss.; aquæ chloroformi ad. ʒ iii. Misc. ʒ i. omni secunda hora. The digestion and general health of the patient should be attended to, and a good portion of the day spent in the open air. Cod-liver oil and iron tonics are now indicated.

EPILEPSY.—**Definition.**—Is a disease characterized by tonic and clonic convulsions, which may affect a part only or the whole of the body.

Causes.—**Heredity.** One or both parents may be epileptic, or they may be neurotic, and have suffered from chorea or hysteria when children; habitual intemperance in the father or mother, or both. Constipation, diarrhoea, and a sluggish condition of the liver may predispose. Terror and fright are exciting causes; as are also blows or falls on the head, or sunstroke.

Symptoms.—*The Mild Form, or "Petit Mal."*—The attack is preceded by irritability of temper, or the child may be dull and stupid. An aura is not so common a feature as in the adult. There may be no convulsion or spasm, and all that is noticed is that, if walking, the child stumbles, the face becomes pale for a few seconds, and it forgets what has happened. The urine is not discharged in these cases, and the cry is absent. There is some stupor and drowsiness, and some peculiarity of behaviour is noticed afterwards; again, the child may be working at his books, when he suddenly stops, his pupils are dilated, and he has a vacant stare; after a few seconds he resumes what he was doing.

The Severe Form, or "Grand Mal."—The attack may begin with a cry or scream, or this may be absent, the child falling without any warning, as if knocked down; he is unconscious, with pale face; and twitchings of the face, arms, legs, or whole body are noticed; or the twitchings may be one-sided. The tongue may be severely bitten in these seizures, and the face may become congested, and the lips blue. This is due to the spasm involving the respiratory muscles, and as the inspiratory are more powerful than the expiratory muscles, the breath is drawn in and held so that more or less cyanosis is produced. The urine and faeces are often voided, and unconsciousness is complete. The attack lasts a variable time, and when consciousness returns everything that has taken place is a complete blank. Death may take place in

one of the attacks. They are usually preceded by the *petit mal* form. In some cases the fits begin always in one particular muscle or muscle-group, from whence they radiate to a variable extent. This species of epilepsy is called "focal" or "Jacksonian" epilepsy, after Hughlings Jackson, who first described it, and it is generally associated with a distinct local lesion of the cortex.

Another form of epilepsy in children is the post-hemiplegic epilepsy. This is seen in those affected with hemiplegia, and in them the convulsions occur on the affected side only, or very rarely become general. In these cases an aura is more common, and mental defect is the rule.

Diagnosis.—*From Syncope.*—This occurs in weakly and anæmic children, or in those suffering from exhausting diseases; there are no twitchings, and insensibility is not complete. Syncope is preceded by faintness; epilepsy is not.

From Hysteria.—The tongue is not bitten in hysteria; the child does not hurt itself; there is no interference with respiration; the pupils are not dilated, and the conjunctivæ are quite sensitive; the prick of a needle or a sharp galvanic shock produces pain.

Nocturnal enuresis is often an early symptom, and, when it occurs, careful inquiries should be made.

Prognosis.—As a rule, if the child is under three years, and shows signs of rickets, the attack will likely be reflex; if over this age, and there is nothing to account for the attack, such as the onset of one of the fevers, the cutting of permanent teeth, or worms, then the affection is likely true epilepsy. Bad, where the attacks date from infancy and there is a bad family history. Well-developed attacks which occur infrequently are more hopeful than modified seizures which continually return.

Treatment.—During an epileptic seizure the child should be relieved of all constrictions about the neck, thorax, and abdomen, and placed in bed or on a sofa, with a soft pillow under the head and shoulders. If the tongue is in danger of

being bitten, a cork or the handle of a spoon should be slipped between the molar teeth on one side; a few whiffs of chloroform, ether, or nitrite of amyl will cut short or modify the convulsions, and chloral hydrate may be given by the rectum. The diet should be simple and easily digested. Plenty of out-door exercise of a mild kind and only a moderate amount of brainwork should be permitted. All kinds of excitement, over-fatigue, and late hours must be avoided. Careful watching is required, when there is a fire in the room, when near ponds, rivers, etc., and at night, lest the child be suffocated in bed.

The bowels should be carefully looked after that constipation may be prevented, and bromide of sodium or potassium given in large doses, gradually increased. Warn the parents that this drug sometimes produces a papular rash. Dr. Eustace Smith* gives two drops of liquor strychniæ with ten drops of tincture of belladonna twice daily, and at night a draught of 30 grs. of bromide of potassium. He increases the strychnine by one drop and the belladonna by three drops every two weeks. American writers speak highly of the iodide of potassium given in increasing doses, and lately the bromide of strontium in full doses has been recommended. Arsenic often brings about marked improvement, and can be combined with the bromide salt; oxide of zinc in 3-gr. doses; valerianate of zinc in 1-gr. doses; nitro-glycerin 1 drop of a one-per-cent. solution; nitrite of sodium or ammonium $\frac{1}{4}$ gr. three or four times daily may be tried.

In cases of "focal" epilepsy, Victor Horsley has reported some remarkable results following trephining.

Counter-irritation may be tried, either by means of a seton in the neck or by blisters.

CHOREA.—Synonym.—St. Vitus's Dance.

Definition.—A neurosis characterized by involuntary movements, chiefly of the arms, legs, face, and tongue.

Causes.—Hereditary tendency to "weak nerves;" girls are more subject to it than boys—three to one. It is most

* On "Diseases of Children," p. 292, 3rd edit.

frequent between the sixth and twelfth years, and one attack predisposes to another. Rheumatism frequently and typhoid and scarlatina occasionally predispose to it.

Exciting Causes.—Fright; mental overwork, or, as Dr. Sturges called it, school-made chorea; intestinal irritation from worms, etc.; and heart-disease.

Pathology.—The following theories have been advanced:—

1. Kirkes' theory, that it is caused by minute emboli washed off the valves of the heart and lodged in the brain.

2. Dickinson's theory, that the conditions in chorea depend upon a widespread hyperæmia of the nervous centres, more especially in the corpus striatum and the regions supplied by the middle cerebral arteries, not due to any mechanical mischance, but produced by the rheumatic condition or by various forms of irritation, mental and reflex.

3. Sturges' theory, that the disease is purely functional, arising, in the majority of cases, from some strong nervous impression.

Speaking generally, "the statement may be made that a certain poison in the blood, either of extraneous origin or internal development, under certain conditions, produces rheumatism, or chorea, or endocarditis. This poison may affect the joints or the nervous system or the heart, probably in accordance with the varying susceptibility of these organs in different individuals, and in many subjects it produces all three diseases at once" (Starr).*

Symptoms.—These begin either gradually or suddenly. In the first the child is dull, nervous, and cries without sufficient cause; she begins to fidget, and scrape her feet on the floor when she sits; she works with some part of her dress, or is noticed to be unhandy and drops articles she is carrying; these increase, and the disease becomes fully established, with constant twitching of the muscles, so that the child is never a minute at rest. The face-muscles attract most attention, from the extraordinary grimaces made; the tongue is

* "Diseases of Children," vol. ii. p. 757.

protruded with a jerk, and as quickly drawn in again, or stuck into one cheek; all the movements are intensified when the child is conscious of being watched. During the height of an attack even the commonest actions are impossible: speech is interfered with; the child cannot button or unbutton her clothes or feed herself. When she goes to sleep the movements cease, but in very bad cases sleep is almost impossible. Sensory disturbances are not uncommon, such as painful spots in the course of the nerve-trunks: hyper or anæsthesia may be present, and the sight impaired.

The movements may be confined to one side (*hemichorea*), and in these cases, when sensation is impaired, it is on the same side as that on which the muscles are affected; therefore the seat of the disease must be central, and not in the cord, for if it were so, sensation would be impaired on the side opposite to the affected muscles (*Broadbent*). There is always a certain amount of muscular weakness, but it may assume sufficient prominence as to simulate paralysis; slight twitches, however, may be made out on close observation, and these often become more pronounced as the paresis passes off.

A mitral systolic murmur develops during the attack in a large number of cases; it may be organic, but is often functional, and disappears with the attack. The temperature is normal, unless endocarditis or other complication is present; the duration of the disease is very variable from one to many months, and death from chorea is very rare.

Diagnosis.—This is usually very easy; it is to be borne in mind, however, that movements very similar are seen in some cases of tumour of the brain, but they are confined to one side.

Prognosis.—Uncomplicated cases almost always recover.

Complications.—Rheumatism, acute or subacute; heart-disease; paralysis of one arm (*paralytic chorea*) and peripheral neuritis.

Treatment.—Rest in bed, and avoidance of any mental effort or excitement, are indicated; careful regulation of the bowels, and regular feeding with simple and easily assimilated

food; much sweets and farinaceous articles are to be avoided. The child should be amused, and encouraged to restrain the movements.

Arsenic should be given in increasing doses, beginning with 5 mins. of Fowler's solution three times daily, and increasing it by 2 mins. every week until the limit of tolerance is reached, when it should be stopped for a couple of days and a purgative given; then resume it. The drug may be given hypodermically with equal parts of glycerin, beginning with ten drops of the solution once daily, and increasing the quantity by one drop each day. Should arsenic not be well borne, or prove useless, zinc may be substituted, beginning with 2 or 3 grs. of the sulphate, and rapidly increasing the dose to 6 or 8 grs. 3 times daily; it should be given in solution, and immediately after food.

Belladonna is often useful, and may be given in large doses (10 drops of the tincture three times daily) to a child of 6 years. Should the movements become violent, sedatives and narcotics will be required; of these I have had most satisfactory results from chloral hydrate, combined with bromide of sodium in 2-gr. doses of the former with 10 grs. of the latter, for a child of 8 years three times daily, with an additional dose at bed-time.

In very bad cases, chloroform or ether inhalations may be given, or the hydrobromate of hyosine $\frac{1}{200}$ gr. may be injected hypodermically once in twelve hours. It may be necessary to feed the child with the nasal or oesophageal tube, and at bed-time, to procure sleep, give a full dose of morphia, either by the mouth or hypodermically. Jaccoud advised spraying the whole length of the spine with ether twice daily. Such cases require the sides of the cot to be padded, or the bed may be placed on the floor. When the attack is declining, the child may be put on equal parts of compound iron mixture and decoction of aloes.

During convalescence a change to the seaside is very useful.

CEREBRAL HÆMORRHAGE.—In new-born babies, after

a difficult and prolonged labour, meningeal hæmorrhage is not uncommon, and it is then called "post-partum meningeal hæmorrhage," or apoplexy neonatorum. Blood or serum exudes from the congested capillaries, or rupture of a small vessel may take place. The consequences of this accident are that the development of the brain is interfered with, and the child is mentally weakened or may become idiotic; the lower extremities are weak and stiff, or there may be well-marked hemiplegia ("birth-palsy"). In many of these cases a history of a prolonged labour, or of a breech presentation, or of an instrumental delivery, or of the child being "born blue" can be obtained.

Symptoms.—If the hæmorrhage has been extensive, convulsions are produced, and these may be followed immediately by paralysis or rigidity. In the great majority of cases, however, nothing is noticed immediately after birth, and it may not be until some months later, or at the end of the first year, when the child is making efforts to stand or walk, that some stiffness is observed about its legs; often there is over-action of the adductors of the thighs, and the child is cross-legged. The arms may be affected, but not nearly so often as the legs, and in severe cases the child may be quite helpless; the mental condition varies from mere mental backwardness to complete idiocy. This affection is often called "Spastic paraplegia."

Cerebral hæmorrhage occurring after birth is generally due to severe convulsions resulting from whooping-cough or the poison of scarlatina, measles, or pneumouia; or these causes may be absent, the child being feverish and drowsy for a day or so, when convulsions come on, followed after a short time by hemiplegia. Inquiries should be made as to any injury, such as falls or blows. The paralysis remains stationary for some weeks, and then improvement begins. The face-muscles regain their power, and later, the muscles of the leg. The arm, as a rule, is injured for life, and contraetures come on at the elbow, wrist, and thumb. The paralyzed arm grows more

slowly than the other one, so that it is smaller, and is noticed to be always cold. The leg assumes more or less of the equinovarus shape, and may be shorter than its fellow. The mental faculties are impaired in a varying degree, and epilepsy may supervene.

Morbid Anatomy.—In birth-palsy a general effusion of blood is found over the vertex or base, or both. In children after the third year, clots will be found at the vertex, base, or in the central white substance. Softening follows, with atrophy of the adjacent brain-substance.

Prognosis.—In all these cases give a guarded opinion, no matter how slight the affection appears. Improvement may be promised, but in the majority there is some mental defect left behind, and a certain number become epileptic.

Symptoms.—Convulsions, followed by paralysis and ending in rigidity, is the usual sequence of events.

Treatment.—In the post-partum variety, the treatment is preventive, by expediting delivery and so avoiding asphyxia. In the other variety, endeavour to prevent recurrence of the convulsions by giving bromide of sodium and chloral freely. The head should be shaved, kept high, and an ice-bag applied; at the same time, a smart calomel and jalap purge may be given. If the child be unconscious, apply a mustard plaster or leaf to the nape of the neck, or three or four leeches to the scalp. If the heart is acting irregularly, add three drops of the tincture or twenty of the infusion of digitalis to the sedative mixture. Later, when recovery is commencing, give iron tonics and strychnine or nux vomica, and the paralyzed limb should be subjected to massage and electricity. Remember the tendency of paralyzed limbs to be cold; therefore roll them in cotton-wool.

MENINGITIS.—Inflammation of the membranes of the brain is a common affection in early life. The following forms may be met with:—

- (a) Simple meningitis; (b) Cerebro-spinal meningitis;
- (c) Chronic meningitis; and (d) Tubercular meningitis.

(a) **SIMPLE ACUTE MENINGITIS** is most common during the first and second years; it may arise without any discoverable cause, but generally a history of a fall or blow on the head, or exposure to a very hot sun, as playing about in the sun with the head uncovered, is forthcoming; it may arise during the progress of such diseases as pneumonia, typhoid fever, middle-ear disease, scarlet fever, or rheumatism.

Symptoms.—These generally set in abruptly with chill or rigor, and acute pain in the head. There is great intolerance of light and sound. Vomiting, delirium, and high fever (104° F.), and rigidity of the muscles at the back of the neck may be present with retraction of the head; drowsiness and delirium soon supervene, and squint or paralysis is added. The *tache cérébrale* is well marked, and attacks of convulsions may follow each other in rapid succession; the pupils, at first contracted, are now dilated, and there is optic neuritis. Finally, the evacuations are passed involuntarily, the breathing and circulation fail, mucus accumulates in the chest, and a fatal termination is brought about in three or four days.

(b) In **CEREBRO-SPINAL MENINGITIS** the symptoms closely resemble those of acute meningitis, but usually there is more marked rigidity of the cervical and spinal muscles, and pain in the back of the neck and down the spine is often complained of, or opisthotonos may be present.

(c) **CHRONIC MENINGITIS** may supervene upon an acute meningitis, or a chronic inflammatory process affecting the convex surface of the brain may arise during infancy or intra-uterine life. As this leads generally to hydrocephalus, it will be referred to under that heading.

(d) **TUBERCULAR MENINGITIS.**—**Definition.**—An inflammation of the pia mater set up by the presence of tubercles on the vessels at the base of the brain. It is commonly seen between the second and seventh years of life.

Causes.—*Predisposing.*—Hereditary predisposition; measles; whooping cough; typhoid sometimes; insanitary conditions; and poverty. The disease is seen in all ranks of life.

Exciting.—The deposit of tubercle in the pia mater and blood-vessels of the base of the brain; falls and blows on the head; severe frights, and excessive mental exertion; softening cheesy matter in any part of the body, as from caseous glands, unabsorbed pneumonic deposits, and chronic empyema, etc. The tubercle bacilli may be conveyed also in food, as from cow's milk and breast-milk, or they may be inhaled.

Symptoms.—There are two forms of the disease: (1) Primary; and (2) Secondary.

1. PRIMARY TUBERCULAR MENINGITIS.—The early or premonitory symptoms are ill-defined, and may precede the actual onset for some months. There is general malaise, with gradual failure of appetite and of flesh and strength. The child is dull: it sits or lies about in preference to taking part in the games of its schoolmates; is stupid at its lessons; and often shows a change in character, becoming easily offended, etc.; the bowels are costive; there is slight feverishness at night, with more or less frontal headache. From this time the disease is usually divided into three stages, viz. (1) the stage of irritation, or excitement; (2) the stage of transition; and (3) the stage of coma.

(1) **The Stage of Irritation or Excitement.**—This stage begins with cerebral vomiting, headache, and obstinate constipation; the tongue is usually furred; the appetite is lost; and often a transient red flush on the cheeks, coming and going without apparent cause, is seen at this time. There is intolerance of light and sound, and the child has a distressed look; the abdomen becomes flabby, and has a peculiar soft, doughy feel; the pulse is quick and regular; the temperature 100° to 101.5° F.; and the breathing is irregular and sighing. The child often awakens from a quiet sleep with a shrill, piercing cry, called "the hydrocephalic cry." In this stage the pupils are contracted.

(2) **The Stage of Transition.**—The symptoms become more marked. The headache is severe, and retraction of the head is very common, the child lying with its eyelids closed, and

squeezed together, and the brows contracted; it often grinds its teeth; the pulse is now slow and intermittent; the temperature a degree or so lower than in the first stage, and the respirations are irregular and sighing, as before; the pupils are now dilated; there is often slight strabismus, nystagmus, or ptosis, and double optic neuritis is the rule. The finger-nail or a pencil drawn lightly over the abdomen, chest, or thighs brings out a bright red line, "the *tache-cérébrale*" of Trousseau. The vomiting ceases, but the bowels remain obstinately confined, and the abdomen is markedly retracted (the boat-shaped abdomen). Towards the end of this stage, convulsions, muscular twitchings, paralyses, and spastic contractures are common; the temperature rises; the pulse quickens; and the urine and motions may be passed involuntarily, or retention of urine may take place.

(3) **The Stage of Coma.**—The temperature again rises, and may become very high; the pulse becomes quick and regular; the irregular and sighing breathing continues; the drowsiness increases to coma; the eyelids are half closed; the pupils are widely dilated and insensible or unequal, and there may be squint or nystagmus; the muscles are soft and flabby; and wasting is extreme and rapid. Many variations from this regular course are seen; thus, there may be diarrhoea throughout, and vomiting may be absent or occur only once or twice; the pulse may be irregular, and the intolerance of light and headache almost *nil*. These exceptions are seen usually in young children, and especially in babies. In babies, the retraction of the head is a valuable sign. The fontanelle is full, and often bulging, and the superficial veins on the forehead are unusually prominent. This retraction of the head is also seen in babies suffering from a simple meningitis during dentition. It is worth noting that the coma of this stage sometimes clears off for a time, and the child may be found sitting up in its cot playing with its toys or books, much to the delight of its friends, who think recovery is at hand; but on examination the pupils will be seen to be widely dilated, and this remission in

the symptoms soon passes off, the child relapses again into coma, and dies in a day or so.

2. SECONDARY TUBERCULAR MENINGITIS.—This form of the disease is very common in babies, but may often be seen in older children. The history reveals illness for some time before any special symptoms pointing to the head are noticed; therefore in these cases nutrition is greatly interfered with, and the child is wasted. A convulsion or vomiting is often the first indication of meningitis, after which the pupils are dilated, sluggish, or unequal, the joints rigid, and the child left in a state of stupor. The convulsions are often repeated; the pulse is small and quick; the breathing irregular; and the abdomen retracted. In this form the symptoms are very variable, and close observation will be necessary to make out its true nature.

Morbid Anatomy.—In simple meningitis and cerebro-spinal meningitis the capillaries of the brain and spinal meninges are intensely injected; much clear fluid is generally found in the ventricles, or purulent fluid may be present on the convexity or base of the brain. In tubercular meningitis grey granulations are found scattered over the pia mater at the base of the cerebrum, and observation shows that they follow the course of the smaller blood-vessels. These granulations, by the aid of the microscope, are seen to project into the lumen of the vessels, or in very small vessels to occlude them completely, and this gives rise to the congestion and subsequent effusion. The ventricles are distended with fluid, and the parts around are in a softened state. Other organs in the body will be found diseased, the commonest being caseous glands, and the lungs are very often the seat of tubercle.

Diagnosis.—Simple acute meningitis and cerebro-spinal meningitis come on acutely with violent symptoms and run a rapid course. They are usually immediately preceded by perfect health, in contradistinction to the tubercular form, which is preceded by a period of failing health and general malaise. Remember the following sequence of events in tubercular meningitis: vomiting; constipation; headache;

slow, irregular pulse; retracted abdomen; contracted pupils; sighing breathing; intolerance of light and sound; and the fact that the child looks distressed. In the secondary form of the disease the earliest symptom usually is vomiting; but a convulsion followed by a squint is often seen. A syphilitic basilar meningitis is sometimes seen, which gives rise to the same symptoms as tubercular meningitis; but there will generally be other evidences of syphilis from which we can form a diagnosis.

Prognosis.—In cases of tubercular meningitis, little hope of recovery can be held out. Bristowe, Henoch, Gowers, Ord, and Jacobi believe that a certain number undergo spontaneous cure. I have never seen this take place.

The prognosis in simple meningitis is more hopeful, but still very grave, and must be guided by the severity of the general symptoms.

Treatment.—In simple acute meningitis and spinal meningitis, the child must be placed at once in a quiet and darkened room, and kept upon the back in the cerebral, or on the side or face in the spinal form. Food should be restricted to small quantities of cooled milk, with kali or soda-water, and nothing else allowed; a brisk purge of calomel should be given. The hair must be cut off the scalp, and an ice-bag or Leiter's tubes applied, or cold, evaporating lotions may be used, but they are much inferior to the ice-bag. If the child is robust and vigorous, a few leeches to the scalp and upper portion of the spine may be applied; blisters are not to be recommended in children. If the headache is severe and accompanied by delirium, bromide of sodium in full doses, according to age, should be given, combined with citrate of potassium and liq. ammon. acet.; the tr. or sneezing hyoscyamine may be added. Dr. Ashby* says that "mercury given freely in the form of liq. hydrarg. perchlor. is of all drugs the one most likely to be of service in simple meningitis."

Professor Whitla† speaks in equally favourable terms of the

* "The Diseases of Children," 3rd edit. p. 453.

† "Dictionary of Treatment," 3rd edit. p. 548.

inunction of mercury when the stage of coma has been reached. Should a specific element be present, give mercury and iodide of potassium.

In tubercular meningitis, blisters, setons, and leeches are of doubtful value; iodide of potassium and liq. hydrarg. perchlor. may be given; and if the pain in the head is severe, cooling lotions or an ice-bag may be applied. Drainage of the sub-arachnoid space has been successfully reported upon.

TUMOURS OF THE BRAIN.—These, in the large majority of cases, consist of caseous masses formed by a local tubercular process, and are found most frequently in the cerebellum, though the pons, basal ganglia, and hemispheres are occasionally attacked. Gliomas, sarcomas, and cysts are found in the cerebellum and pons. A history is often given of a blow or fall on the head a few weeks prior to the onset of symptoms.

Symptoms.—*Headache* (persistent) in infants, shown by contraction of the brows, throwing the hand up to the head, rolling the head from side to side; cerebral cry; and intolerance of light and sound.

Vomiting.—Coming on without cause, and in the intervals of feeding; not preceded by sickness.

General Convulsions.—There may be but one convulsion at the onset, or it may be repeated frequently.

Optic Neuritis.—Is especially common when the tumour affects the cerebellum. The discs are swollen; the veins distended and tortuous; and atrophy of the discs follows. It is usually double, though it always appears first in one eye, and is rarely equally intense in both.

Giddiness and the reeling gait are common, especially if the pons or cerebellum is affected.

Slow and irregular pulse, and Cheyne-Stokes respiration, are also common symptoms. Hydrocephalus occurs in a considerable proportion of cases where the tumour affects the cerebellum, and the younger the child the more likely is this condition to be produced.

Diagnosis.—Tumour of the brain in the child is nearly always tubercular, therefore remember the following points: The tumour may be diagnosed as tubercular when there is an hereditary predisposition to tubercle, and especially if tubercle or cheesy degeneration of glands can be detected elsewhere in the body. Tubercular tumours are most frequent in the cerebellum, or distributed as multiple tumours; therefore, if you have cerebellar symptoms or multiple lesions, the diagnosis will be strengthened.

Prognosis.—Almost universally fatal. There is just one gleam of hope, and that is that the tumour may be syphilitic.

Treatment.—Where there are any grounds for suspecting syphilis, vigorous constitutional remedies should be used without delay; otherwise the treatment resolves itself into relieving symptoms, such as vomiting, headache, etc., by giving hydrocyanic acid, iced milk or peptonized milk for the former, or bromide and chloral for the latter. A quiet and darkened room is grateful, and cod-liver oil may be given. Blistering, the ice-bag, or setons are of more than doubtful value. Tumours or cysts situated in the motor area of the cortex have been successfully dealt with by the surgeon.

INFANTILE PARALYSIS.—**Synonyms.**—Acute atrophic paralysis, Acute anterior poliomyelitis.

Causes.—Early life, four-fifths of the cases occurring before the third year; the warm months of the year; over-exertion; chilling of the surface when the body is heated, as sitting on damp grass, etc.; injuries, such as falls and blows; and dentition. It may develop as a sequel to measles, scarlatina, acute diarrhoea, pneumonia, or during rheumatism and chorea. It may be congenital.

Symptoms.—Four stages of the disease are usually described.

1. *The Initial Stage.*—During which there may be feverish symptoms for some days before any paralysis is noticed. The temperature is 101° to 102° F.; and there may be spasms, drowsiness, delirium, or even convulsions. Or, again, there may be no symptoms during this stage, or only those which are

usually attributed to dentition or some gastric disorder. In a certain number of cases, the history given is that the child was put to bed the night before in its usual health, and in the morning an arm or leg (or both) was noticed to be paralyzed. There is no relation between the severity of the symptoms in this stage and the amount of paralysis which follows, and it is worthy of note that the paralysis reaches its height at once.

2. *The Stationary Stage*.—The paralysis, having attained its height in the previous stage, remains stationary for a time varying from two to eight weeks. The extent of the lesion varies; it may be widely distributed or affect but one limb; hemiplegia is very rare. The reflexes, both superficial and deep, are lost; sensibility is normal, as a rule; there is no pain, no rigidity of joints, no loss of control over the sphincters of the bladder and rectum, and no tendency to the formation of bed-sores. The paralyzed muscles do not respond to the faradic current, but do to slow interruptions of the constant current—"reaction of degeneration." Interference with the nutrition of the limb is not long in showing itself, so that the part is cold, and often looks purple or livid; the temperature is depressed; the muscles waste; and the whole limb becomes smaller in all its dimensions than its fellow.

3. *The Stage of Regression*, or improvement, sets in in those muscles whose faradic contractility was not entirely lost. Improvement may go on for several months, and in rare cases all the affected muscles may recover; but the rule is that a certain number are left permanently paralyzed.

4. *The Chronic Stage*.—In which no further improvement is to be looked for. The muscles waste and undergo fatty degeneration; contractures take place, and the limb ceases to grow. The wasting is accompanied by relaxation of the ligaments, and sometimes by dislocations of joints.

Paralytic contractures are characteristic results of this disease. The contractions occur in those muscles which have escaped or were only slightly affected, and, as their action is unopposed, deformities result in the following order of

frequency, according to Adams: (1) talipes equinus; (2) equino-varus; (3) equino-valgus; (4) calcaneus or calcaneo-valgus; and (5) talipes varus.

Pathology.—The lesion is a purely spinal one, the brain being unaffected. There is acute inflammation of or hæmorrhage into the anterior cornua of the grey matter of the cord, but the cervical and lumbar enlargements suffer most severely. The inflammatory products press upon and lead to both temporary and permanent damage of the large multipolar ganglion-cells in the anterior cornua. After a certain time, absorption of these products takes place, with the result that certain muscles recover, and, finally, the anterior horns waste and shrink so that the nerve-fibres and ganglion-cells are destroyed; this is caused by sclerosis, according to some authorities. The paralyzed muscles waste, and their fibres finally become replaced by connective tissue or fat; the bones waste also. The lesion in the cord is probably due to some microbe which fabricates a poison or an albumose; this becomes absorbed and attacks the delicate and growing spinal cord of the child.

Diagnosis.—The characteristic features of this disease are—

1. Abrupt onset, which may be accompanied by feverish symptoms, or these may be entirely absent.

2. The paralysis reaches its height at once, or in a few hours.

3. No loss of sensation; no rigidity; and no loss of control over the sphincters.

4. Loss of the superficial and deep reflexes; loss of response to the induced current; and later, the reaction of degeneration is present.

5. The arrest of growth in the affected limb and the deformities.

The disease most likely to be confounded with poliomyelitis is cerebral paralysis. The following table, modified from Jacobi, shows the different points:—

Poliomyelitis.

Paraplegia, the rule.
 Intelligence, free.
 Disposition, lively.
 Convulsions, rare; duration of symptoms, a few hours.

Sensibility, not affected.
 Reflexes, superficial and deep, lost.
 No rigid contractures of upper extremity.
 Atrophy of paralyzed muscles and arrested development of the limb, very marked.
 Faradic contractility, diminished or lost; reaction of degeneration.

Cerebral Paralysis.

Hemiplegia, the rule.
 Intelligence, depressed.
 Disposition, apathetic or cross.
 Convulsions, the rule; symptoms prolonged for several days or weeks.

Sensibility, affected at first.
 Reflexes, increased.
 Extensive and rigid contractures of the upper extremity very frequent.
 Atrophy, very slight.

Electrical reactions, normal.

In acute inflammation of the spinal cord, or myelitis, the loss of power is complete, and there is marked loss of sensation with paralysis of the rectum and bladder, and alkaline urine; the reflexes are increased, and bed-sores form readily.

In spasmodic spinal paralysis, contractures are present; the reflexes are *increased*, and the muscles do not atrophy.

In pseudo-hypertrophic paralysis, the course of the disease is progressive and very slow; the temperature of the limb is not affected; the reflexes gradually disappear, and faradic contractility remains so long as any muscular fibres are left.

In diphtheritic paralysis, there is a history of sore throat. The paralysis is less general, and passes from one group of muscles to another; the pharyngeal muscles are affected as well as those of the limbs; and faradic contractility, though lowered, is not completely lost.

Birth-paralysis is observed immediately after delivery, and affects the face and arm, not the lower extremities.

Prognosis.—Great improvement is the rule; complete recovery is very rarely or never seen. In the muscles in which the paralysis is likely to be permanent, faradic contractility disappears at an early date—usually before the end of the first week or during the second. Muscles which retain some degree of faradic contractility on the seventh or eighth day, may be

expected to regain their power, but every muscle which does not so react after the lapse of a fortnight from the onset of the disease, is likely to be permanently disabled.

Treatment.—If the case is seen early, look for and remove any source of irritation, such as inflamed gums due to advancing teeth, worms, etc. The child must be kept in bed in a quiet room, and made to lie on its side or face. Milk diet and light soups will be most suitable, and the bowels should be relieved with a dose of calomel.

Internally.—Ergot should be given, in the form of the fluid extract, five to ten drops to a child two years old, three times daily, or $\frac{1}{4}$ gr. of Boujean's ergotine may be injected subcutaneously every day while fever lasts, as recommended by Dr. Althaus; it can also be given in suppositories. When the initial symptoms have subsided, iodide of potassium may be given, 1 to 2 grs. three times daily.

Externally.—Counter-irritation to the spine by small blisters of liquor epispasticus, mustard plasters, etc., should be used, and in plethoric children a few leeches or the spinal ice-bag. These applications should all be made chiefly over the cervical and lumbar enlargements of the cord. The *cervical enlargement* extends from the upper limit of the cord to the first or second dorsal vertebra, and is largest opposite the fifth or sixth cervical vertebra. The *lumbar enlargement* begins at the tenth dorsal vertebra, is largest opposite the twelfth dorsal, and from this point becomes gradually smaller (Quain).

No local treatment to the paralyzed muscles should be commenced until some recovery of power is noticed, when the faradic current may be used daily together with massage. Begin with massage first, then a very weak current, so as not to frighten the child. Encourage the patient to use its muscles as much as possible; keep the paralyzed limb or limbs warm; and endeavour to maintain a high state of general good health by iron and other tonics. Strychnine, either by the mouth or hypodermically, may be given at this time.

The late Dr. Cagney advocated the use of weak galvanic

currents, massage of the affected limbs, and injections of strychnine from the earliest stage, on the ground that, as the nervous structures involved are extravasacular, no fear need be entertained of exciting or increasing inflammatory action in their neighbourhood by these stimuli. He injected $\frac{1}{100}$ of a grain of the sulphate of strychnine into the substance of the affected muscles daily, and increased the dose gradually to $\frac{1}{10}$ or even $\frac{1}{5}$ of a grain. As massage causes an increased flow of blood through the muscles, wasting and loss of power may be checked and growth materially assisted. It should therefore be continued throughout the whole period of growth.

PSEUDO-HYPERTROPHIC PARALYSIS. — **Causes.** — The essential causes are unknown. It is most frequent between the ages of two and eight years, and Niemeyer says it may be congenital. It is much more frequently seen in boys than in girls. It has a tendency to run in families, and, like hæmophilia, appears to be transmitted through the mother without being herself affected.

Symptoms.—The child either shows the first symptoms about the time it should begin to walk, or these may not be observed for some years after the child has walked. Weakness in the muscles of the legs is usually the first indication. "The child is late in walking, walks clumsily, falls with ease and rises with difficulty" (Gowers). At first the muscles of the calves are enlarged, firm, and hard; next to them come the infra-spinati, the glutei, and the lumbar muscles. The latissimus dorsi and the lower part of the pectoralis major do not enlarge, but, owing either to atrophy or failure in development, are often absent when the case is first seen. The absence or great atrophy of these two muscles causes the posterior fold of the axilla to disappear, which becomes very apparent when viewed from behind. This loss of the posterior fold, together with the enlargement of the infra-spinatus, is regarded by Gowers as almost pathognomonic. The child walks with a peculiar waddling gait, and is very soon tired. When standing alone he separates his legs widely, his shoulders are

thrown backwards, and the abdomen is prominent, so that a vertical line let fall from the back of his neck clears the buttock, thus producing the deformity known as "ensellure," or "saddle-back." If placed on the floor, his efforts made to get up are very striking; the child either cannot rise without assistance, or he pushes himself off the floor and then places both hands on his legs, next on his thighs, just above the knees, and finally catches hold of any object at hand, a chair or the table, for further help; in fact, as it has been expressed, "he climbs up himself." After a variable time, the enlarged muscles contract, the earliest to shorten being the gastrocnemii, then the glutei, the lumbar muscles, and lastly the muscles of the arms. Deformities from these contractures take place, such as talipes equinus; lordosis from weakness of the hip and spinal muscles; and, finally, the child is bedridden and helpless. "Symmetrical talipes equinus rarely takes place before the sixth year, and is a constant symptom of this affection" (Duchenne).

Electrical Reactions.—The reaction to both the faradic and galvanic currents is unaffected at first, but later becomes very much weakened or entirely lost. The reaction of degeneration is never present. The superficial and deep reflexes, at first normal, are gradually lost; sensibility remains normal; and control over the sphincters is never interfered with. The temperature of the parts is lowered; the general health is not disturbed by feverish symptoms at any stage of the disease; the mind usually remains clear till the end, but occasionally the intelligence is feeble, or the child may be idiotic.

The disease drags on in a slow way, and death usually takes place before puberty is reached. The end is often precipitated by an attack of bronchitis or pneumonia.

Pathology.—The disease is caused by an increase in the connective tissue and fat of the muscles, the former giving them their hard feel, the latter accounting for their size. The connective tissue contracts and strangles the muscular fibres, which gradually disappear and give place to fibrous bundles

and fat-cells. No morbid changes are to be found in any part of the nervous system.

Prognosis.—The disease is steadily progressive, and usually leads to a fatal result; phthisis is a common cause of death.

Diagnosis.

<i>Progressive Muscular Atrophy.</i>	<i>Pseudo-Hypertrophic Paralysis.</i>
Nearly always begins in the upper limbs, and invades subsequently the trunk and lower limbs.	Begins in the lower limbs, and rarely reaches the face.
Is rare before puberty.	Is almost exclusively a disease of childhood.
The reaction of degeneration is present.	Never present.
Fibrillar contractions are always present.	Very rarely seen.
Trophic changes are frequent.	They do not occur.
There is degeneration of the anterior horns as well as the white matter of the cord.	The cord is normal.
Microscopic examination of a portion of muscle shows no increase of connective and fatty tissue.	There is great increase of the connective tissue and fat.
Heredity is not a marked feature.	Is very strongly marked.
<i>Poliomyelitis Anterior.</i>	<i>Pseudo-Hypertrophic Paralysis.</i>
Onset is sudden, and the paralysis reaches its height at once.	Onset very gradual, and the paralysis is progressive.
Atrophy of the limb is rapid and extreme.	Hypertrophy is the rule.
The reaction of degeneration is present.	Never present.

Treatment.—The general health should be maintained in the best possible state, and those remedies given which tend to improve nutrition, such as iron, cod-liver oil, arsenic, and strychnine. Electricity, massage, and kneading of the affected muscles, and gymnastic exercises should be used steadily and perseveringly from the very beginning.

MYELITIS.—An acute transverse inflammation of the cord. Is sometimes seen in children, but it is rare before the tenth year.

Causes.—Exposure to cold; injuries, as blows and falls; excessive muscular exercise: and severe fright. It has been seen after typhoid.

Symptoms.—These begin with a feeling of “pins and needles” in the feet, and some pain in the back at the upper level of the inflammation is the rule; the girdle sensation is generally present, and marks the upper limit of the lesion. This pain, which is often ascribed to rheumatism, is soon followed by paralysis, which gradually increases for twenty-four or forty-eight hours, by which time it has reached its height. Moderate pyrexia, 101° to 102° F. is usual, and occasionally delirium and convulsions have been noted. There is loss of sensation, loss of motion, and incontinence of urine and feces. The degree of paralysis varies according as the inflammation is severe or otherwise. At first the reflexes may be entirely absent, but they return, and after a time are increased if the lesion is above the lumbar enlargement. If the lumbar enlargement is involved, the motor paralysis is complete. The sphincters are powerless, and the muscles waste. If the cervical enlargement is involved, the arms are paralyzed, the pupils may be affected, and also the muscles of respiration.

Pathology.—Hyperæmia and swelling of the pia mater and cord are early changes; later, the condition of matters will depend upon the amount of blood effused, and in some cases the cord is so grossly injured by a large hæmorrhage that a clot only is found, or softening is so pronounced that the chord is of a creamy consistence and appearance; finally, both fibres and cells give place to an ætial increase of the fibrous elements of the interstitial structure, and new fibroid tissue is deposited.

Diagnosis.—See Infantile Paralysis.

Prognosis.—A *dorsal* myelitis is less serious than a *lumbar*, and very much less serious than a *cervical*. The more sudden and complete the onset the worse the outlook: high temperature, early bed-sores, and serious involvement of the sphincters are unfavourable.

Treatment.—Absolute rest in bed, either on the side or face. Counter-irritation to the spine, with mustard or blistering fluid. The spinal ice-bag or leeches may be used. Give ergot as directed under Infantile Paralysis. Prevent bed-sores by careful nursing. When the acute symptoms have subsided, begin massage and electricity, and give iodide of potassium and strychnine.

HYDROCEPHALUS.—**Definition.**—An abnormal accumulation of fluid within the cranial cavity. It may be acute or chronic.

ACUTE HYDROCEPHALUS.—This is usually caused by tubercle in the brain, and the term is practically synonymous with tubercular meningitis (see p. 174, *et seq.*).

CHRONIC HYDROCEPHALUS.—May be congenital or acquired, internal or external.

Causation.—The congenital form is usually an internal hydrocephalus, that is, the fluid collects in the ventricles, and these cases cause much obstruction to delivery. Intrauterine inflammation of the lining of the ventricles is the likely cause. These infants are frequently stillborn, or die soon after delivery; they may linger on for a year or two.

The acquired form may follow an acute meningitis, or be due to syphilis, which gives rise to a sub-acute basal meningitis. It may be caused by a tumour pressing on the veins of Galen; by enlarged glands in the neck; it may be part of a general dropsy, the result of cardiac or renal disease, or it may develop in children suffering from rickets and anæmia.

Morbid Anatomy.—In internal hydrocephalus, the ventricles are found greatly dilated with a clear fluid of sp. gr. 1005, containing chloride of sodium and a trace of albumen. In external hydrocephalus, the fluid is smaller in quantity, but of the same composition; it is much rarer. Signs of meningitis are rarely wanting.

Symptoms.—Noticeable enlargement of the head is preceded often by convulsions, drowsiness, and some fever (meningitis). As the fluid accumulates, the head expands, and may attain

enormous dimensions; the sutures are separated, and the fontanelles may join; the bones are thinned; the fontanelles bulge; and fluctuation can be readily detected. The child is wasted, and the face wears a pinched look, which contrasts strongly with the great size of the head. The forehead is very prominent; the head is spherical; the eyes look prominent, and the eyeballs are depressed owing to flattening of the orbital plates; the sclerotic is visible below the upper lid, while the iris may be partially covered by the lower; vision is often defective or lost from stretching or compression of the optic nerves or commissure. Intelligence varies, but usually the child is mentally backward. Attacks of laryngismus stridulus are very frequent; convulsions are not rare; and paralyzes, contractures, and twitching movements may all be present. The case may go on to idiocy.

Prognosis.—Always unfavourable.

Treatment.—Is highly unsatisfactory. If syphilis is suspected, mercury and iodide of potassium should be given; indeed, they should be tried in any case. Cod-liver oil may be rubbed into the scalp, and cloths saturated with the oil may be worn on the head under a waterproof cap. A few ounces of fluid may be withdrawn by a fine trocar inserted through the anterior fontanelle; strapping the head has been tried, but has not been followed by improvement; injections of solution of iodine or of perchloride of mercury are dangerous.

FACIAL PARALYSIS.—Paralysis of the portio dura of the seventh nerve is not uncommon in children, and may be seen at birth or afterwards.

Causes.—Pressure on the nerve with the forceps, or prolonged impaction of the head in the pelvis, in both of which the lesion may be bilateral (obstetrical paralysis).

After infancy, the nerve may be pressed upon (1) inside the skull, by extravasation of blood or by tumour in the brain; (2) in the Fallopian canal by hæmorrhage into the nerve-sheath, by fracture of the skull or carious disease of the petrous bone; (3) after leaving the temporal bone, by blows or falls.

parotitis, exposure to cold, or rheumatism. The two commonest causes are exposure to cold and caries of the petrous bone—the first in children over three years, the second in children under that age.

Symptoms.—When due to a cold draught of air, pain in the ear or over the side of the head is often complained of for some hours before any paralysis is observed, so that the child may be put to bed well and wake up affected. The face on the affected side is devoid of the natural wrinkles and expression; the eyelids fail to meet perfectly, and the angle of the mouth is lowered a little and drawn to one side; on looking into the throat, the soft palate hangs, and the uvula is arched towards the same side; food collects between the gums and the cheek; speech is impaired; and whistling is imperfect and difficult. This is often called the ‘rheumatic’ form. After exposure to cold, it may be preceded by some feverish symptoms for a day or two, but is often unattended with symptoms of any kind.

When due to caries of the petrous bone, there is an offensive discharge from the meatus, and hearing and taste are impaired. If the cause be inside the skull, signs indicating that other nerves are involved, as squinting and paralyses, will be added.

Prognosis.—This is good in the rheumatic form, and in those due to pressure at birth a partial recovery is often followed by a peculiar condition of contracture of the paralyzed muscles. “If the electric excitability of the nerve is not below normal at the end of ten days, recovery will probably follow in a few weeks. If at the end of a fortnight it is absolutely lost, the palsy will certainly last for several months” (Gowers).

Treatment.—When due to cold, apply a couple of leeches or a small blister over the nerve as it passes out of the stylo-mastoid foramen. Keep the side of the face warm with cotton-wool, and give 5 grs. of salicin or salicylate of sodium three times daily. In a fortnight change to liq. strych., 2 mins., gradually increased, with iron and decoction of aloes, or iodide of potassium in increasing doses. Electricity, both galvanic

and faradic, should be used in all cases except where the cause is central.

Massage should be commenced as soon as all inflammatory symptoms have subsided. To encourage parents in its use, a liniment may be ordered to be rubbed in three or four times daily. When arising from ear-disease, the case is one for a specialist.

PARAPLEGIA.—Loss of power over the lower extremities may be due to pressure on the cord by a tumour of any kind, to myelitis, or a spastic paraplegia may be of cerebral origin, and follow injury during the act of birth; but by far the commonest cause of this condition during childhood is compression of the cord due to carious disease of the vertebræ or "*Pott's disease*." The paralysis is caused by pressure exerted upon the cord by inflammatory products, which are effused outside the dura mater between it and the bone, or inside the dura mater, and the cord becomes pressed upon; or the inflammatory process may extend to the substance of the cord itself. Any part of the cord may in this way become affected, and some of the nerves, as they pass through the dura mater and foramina, are very liable to suffer compression by the curdy pus or lymph effused.

Symptoms.—In Pott's disease of the spine, symptoms of pressure on the cord or the nerves issuing from it may make their appearance early or late in the disease; but in the majority of cases deformity of the spine is first noticed accompanied with some irritation of the sensory nerves, and followed after many months by symptoms of pressure on the cord. In a large number of cases, however, weakness and paresis of the legs, with exaggerated knee-jerk and ankle-clonus, may have existed for many months before any spinal deformity was detectable, and it is most important to bear this fact in mind, as such cases are very puzzling.

The onset of the paresis is very gradual, as a rule, and the symptoms will vary according as the cord is affected in (a) the cervical, (b) the dorsal, or (c) the lumbar region.

(a) When the *cervical region* of the cord is compressed or irritated, the sensation of *pins-and-needles* in the hands and arms is very usual, and shooting pains in the arms, shoulders, neck, or scalp are complained of; there is gradual loss of power in one or both arms, with wasting of the muscles, hyperæsthesia of the skin, followed at a later date by anæsthesia.

(b) When the *dorsal region* of the cord is affected, the reflexes are exaggerated and ankle-clonus can be obtained. A spastic paraplegia develops gradually, so that from being merely weak upon its legs and easily tired the child becomes unable to walk, and later to stand without assistance. In the early stage, and before motor symptoms manifest themselves, various pains of a shooting nature may be complained of, following the course of the intercostal nerves, and children often refer these pains to the umbilicus or epigastrium. There may be hyper- or anæsthesia.

(c) When the *lumbar region* of the cord becomes affected, either by compression or descending inflammation, the tendon reflexes are abolished, so that the knee-jerk and ankle-clonus are absent; the sphincters of the bladder and rectum will now be paralysed, either partially or completely, and the distress of incontinence of urine and fæces will be added to the child's sufferings. The course of the disease is usually chronic and progressive, and a fatal issue is brought about by advancing exhaustion, or not infrequently by tuberculosis of the lungs or lardaceous disease.

Pathology.—The lesion in most cases is due to tubercular disease beginning in the body of the vertebra, but it may be simply the result of an injury, or be due to congenital syphilis.

Treatment.—The medical side of the treatment of these cases resolves itself into placing the child under the best hygienic conditions procurable, such as residence close to the seaside; by maintaining the strength by as much nutritious diet as the child can cope with; and by giving cod-liver oil and iron and quinine tonics in suitable quantities. The further treatment

devolves upon the surgeon; and the chapter on Spinal Disease in the third edition of Ashby and Wright, p. 664, gives an admirable and exhaustive account of this affection, and will well repay careful study.

CHAPTER XII.

DISEASES OF THE URINARY SYSTEM.

INCONTINENCE OF URINE.—*Synonym.*—*Enuresis.*

This affection is not uncommon, and is more troublesome during the winter than the summer months. It may occur at night only, during the day only, or both night and day.

Causes.—When it occurs at night only, the cause is generally to be found in some irritation of the bladder reflected from a phimosis or adherent prepuce; threadworms in the rectum; rectal polypi or fissure of the anus; very acid or alkaline urine; stone in the bladder; cystitis, or hip-joint disease. It is generally found in the children of neurotic parents, and often a family history of epilepsy can be obtained. Enlarged tonsils and post-nasal adenoids, by producing a semi-asphyxiated state during sound sleep, may give rise to it. It may also be caused by late and unwholesome meals, and the free drinking of fluids a short time before bedtime. It may be associated with general delicate health, with severe frights or other shocks to the system, or with masturbation. In this form boys are more frequently affected than girls, and it should be remembered that nocturnal incontinence may be the only manifestation of epileptic attacks in the night.

When the incontinence takes place both night and day, the case is more serious. The bladder may be absent or too small; the incontinence may be an overflow from some obstruction (calculus, etc.); there may be imperfect development of the neck of the bladder the urethral muscles may be deficient

from imperfect innervation, due to paralysis, spina bifida, etc., or the meatus may be contracted.

Treatment.—Look for and remove the cause, if you can. Circumcise for phimosis; enlarge the meatus by incision, if it is contracted; counteract any acidity or alkalinity of the urine, and remove cystitis if it exists. The diet should be restricted to milk and light soups; condiments should not be allowed, or anything that will make the urine irritating. Late suppers should be prohibited, and no fluid allowed for an hour or so before bedtime. The bedclothes should be light, and, if there is a habit of lying on the back, an empty spoon may be tied on opposite the middle of the spine. The child should be made to pass water just before lying down, and should be lifted once or twice again through the night to micturate.

Raising the foot of the bed, so that the child lies with its pelvis higher than its head, or, in other words, placing its bladder so that the urine will not be in contact with the trigone, has been resorted to with success. Injecting a large quantity of fluid, so as moderately to distend the bladder, may also be tried. Electricity should have a trial, one pole being applied to the spine, and the other one held over the pubes, or placed in the perineum. Cold sponging and shampooing are also useful for increasing the muscular tone.

Of drugs for this affection, belladonna is *facile princeps*. It must be given in full doses, and 10 mins. three times daily to begin with for a child three or four years old should be rapidly increased until there are some evidences of its physiological effects, such as dryness of the mouth and throat and dilatation of the pupil; if the urine is highly acid, 5 grs. of bicarbonate of sodium may be combined with it (see R 31). Liq. atropiæ sulph., two drops at bedtime on a piece of sugar, is a good remedy, and sometimes succeeds when belladonna fails. Ergot is another good remedy in 10-drop doses three times daily, and success has been reported from the use of bromide of sodium or potassium, benzoate of ammonium, camphor, chloral, borax, cantharides, digitalis, or strychnine.

In obstinate cases, the bladder should be sounded for calculus, or irritability of the neck of the bladder may be treated with a strong solution of nitrate of silver, as recommended by Holmes. If there is much cystitis, 5-gr. doses of boracic acid in milk, three or four times daily, should be tried.

ACUTE AND CHRONIC BRIGHT'S DISEASE.—Any inflammation that attacks the secreting structure of the kidney, whether such inflammation be catarrhal or interstitial, partial or general, is essentially Bright's disease more or less.

1. ACUTE BRIGHT'S DISEASE.—**Synonyms:** Tubal nephritis; Parenchymatous nephritis.

Causes.—The poison of scarlatina; exposure to cold and wet; diphtheria; typhoid; erysipelas; rheumatism; phthisis; or lardaceous disease.

Symptoms.—Headache and vomiting, with restlessness and a temperature of 102° or 103° F., are the early symptoms of nephritis; the tongue is coated, the appetite is lost, and the bowels are constipated. There is generally a deep dull pain in the lumbar region; the urine is scanty and high-coloured, with a specific gravity of 1025 to 1040, and the pulse is hard, small, and quick. The face becomes puffy about the eyelids first, and on examination of the urine albumen is found in large quantity, and the microscope shows blood-corpuscles and hyaline casts; after a few days the dropsy extends to the feet and legs, and is often early seen in the scrotum. Sometimes the dropsy disappears quite suddenly, but the albuminuria remains; this is unfavourable, as it indicates a chronic type of the disease. There is usually some disturbance of the heart's action, its sounds being thick, and the apex-beat displaced outwards. Again, once in every eight or ten beats there is often noticed a one-beat stagger or shuffle; the left ventricle may be found dilated after death. Albuminuric retinitis is present in a fair number of cases.

Complications.—Violent and repeated convulsions; persistent vomiting; anasarca: hydrothorax and oedema of the

lungs; broncho-pneumonia; peritonitis; pleurisy with effusion; and peri- and endocarditis.

Diagnosis.—This is not difficult, as the symptoms are very definite, such as headache, vomiting, puffiness under the eyes, and albuminuria. The differentiation of the chronic forms will be considered later.

Prognosis.—This is always serious. Bad signs are the persistence of the dropsy and albumen in any considerable quantity; persistent scantiness of urine; much pallor; the occurrence of erythematous eruptions; and the existence of albuminurie retinitis. Remember that sudden death may occur from rapid dilatation of the left ventricle, especially when the disease is a sequel of scarlatina.

Treatment.—Rest in bed *between blankets* is the first essential; encourage the skin to act freely by the daily warm or hot-air bath; give plenty of demulcent drinks; and let the food consist of milk, and milk only, as long as there is albumen in the urine. The bowels should be kept freely open, those medicines being given which produce watery stools, such as the compound powder of jalap, or Hunyadi Janos or Franz Joseph waters, and a saline diaphoretic, such as liq. ammon. acet. ʒ ss. with spt. eth. nit. ℥ x every three hours. When the urine is very scanty and highly albuminous, and dropsy has become general, more active measures are called for. In these cases, the hot-air bath two, three, or more times daily is highly useful, and nitrate of pilocarpine, either by the mouth or hypodermically, should be given, beginning with $\frac{1}{10}$ gr. for a seven-year-old child; and if copious sweating does not commence in half an hour the dose should be repeated. It may be given by the mouth just before the patient is placed in the bath or warm pack, and 20 drops of spt. ammon. aromat. in a little hot water will overcome any depressing effect upon the heart.

Diuretin in 5 to 10-gr. doses gradually increased, may be tried instead of the pilocarpine, and it may be usefully combined with 3 or 4 drops of tr. digitalis. It should be remembered that the salts of potassium should never be prescribed in Bright's

disease, as they greatly increase the danger of nræmia; the salts of sodium may be used instead. When the temperature becomes normal, a very guarded return to soups and meats will be necessary, and muscular exercise should be very sparingly indulged in. Iron in the form of perchloride should be combined with liquor ammoniæ acet. and dilute acetic acid (R 14). This combination is called Basham's chalybeate diuretic.

The complications are often serious, and they arise quickly. Their treatment is as follows:—

Convulsions.—Place the child in a wet pack or hot-air bath, and cautiously administer chloroform; give a drop of croton oil, and hasten its action by means of copious warm enemata. 20 grs. of bromide of sodium should be injected into the bowel, or 10 grs. given by the mouth, if the child can swallow. In desperate cases pilocarpine hypodermically— $\frac{1}{15}$ to $\frac{1}{12}$ gr. may be tried—and the ice-bag applied to the shaven scalp. Leeches to the loins and mastoids are better practice than venesection in children. Benzoate of ammonium in 10-gr. doses has been recommended by Dr. Barrs.

Vomiting.—Ice to suck; iced milk and soda water in tablespoonfuls at a time; iced champagne; hydrocyanic acid and bismuth; drop doses of the tincture of iodine in a teaspoonful of water.

Dropsy.—The abdomen, when much distended, should be tapped with a Sontheys's trocar and long tube; the thorax may be dealt with similarly.

Suppression of Urine.—Brisk purgatives; dry cupping of the loins; diuretics and plenty of bland fluids to drink.

Pulmonary Œdema.—Free purgation; digitalis, and plenty of stimulants.

Cardiac Dilatation.—Digitalis, strophanthus, or caffeine and strychnine, with plenty of stimulants.

2. CHRONIC BRIGHT'S DISEASE.—The “large white,” the “small contracted,” and the “amyloid” kidney are found in children.

(1) **The Large White Kidney.**—Symptoms.—The course of this disease is usually very chronic; the child gets better for

a time, and then some slight cold brings back all the old symptoms. There is usually well-marked anæmia, the child being puffy and pasty-looking. The abdomen is swollen, and fluctuation may be detected in the flanks; the skin over the tibiæ and dorsum of the feet pits on pressure; the pulse is slow and of high tension; the heart is dilated, and the apex beat diffused and displaced outwards; the urine is scanty, contains many casts, and is loaded with albumen. The dropsy gradually increases, and the child becomes water-logged; dyspnoea is troublesome, and finally coma supervenes, death being often preceded by uræmic convulsions.

Pathology.—*In the large white fatty kidney*, the tubular structure is found chiefly involved. The kidney is enlarged, and its capsule can be readily detached. The cortex is much swollen, smooth on the surface, and pale in colour. The convoluted tubes are twice their normal size, and their epithelial lining is swollen and granular-looking.

(2) **The Granular Contracted Kidney.**—**Symptoms.**—This form is rare in children. Thirst, and the secretion of large quantities of urine of low specific gravity, are early symptoms, and often suggest diabetes. Albumen may be absent from the urine, or only trifling in amount.

Starr* gives the following four classic symptoms of interstitial nephritis in the order of their occurrence:—

(1) Increased arterial tension, with a sharply accentuated second sound of the heart.

(2) The small amount of albumen present, or its entire absence for considerable periods of time.

(3) The small number of casts, their small size and hyaline appearance and their form, which is often twisted or distorted.

(4) The appearance of albuminuric retinitis, which is a late and very characteristic symptom.

These four symptoms are so nearly always present in interstitial nephritis and so uniformly absent in other forms of renal disease that they may be regarded as pathognomonic.

* "Diseases of Children," vol. ii. p. 997.

Pathology.—*In the contracted granular kidney*, the organ is reduced in size; the capsule is thickened and adherent; its surface is nodular, and its colour deep red. The cortex is thin; the medulla is atrophied, and its substance dense. The connective tissue is greatly increased, which thickens the capsule and compresses the capillary tufts and convoluted tubes.

(3) **Amyloid Kidney.**—**Causes.**—Chronic suppurations and ulcerations, such as occur in Pott's disease; disease of large joints, as coxalgia, or chronic ulceration of the bowels, chronic phthisis, syphilis, or chronic albuminuria.

Symptoms.—Anæmia and marked pallor, œdema and general dropsy, especially if the liver is affected. The urine is pale and increased in quantity; albumen is generally present; and transparent hyaline casts may be seen under the microscope. Advancing weakness and exhaustion, with uncontrollable diarrhœa, precede death.

Pathology.—In this form the kidney is enlarged, and has a waxy look. In the last stage the kidneys become atrophied, contracted and deformed with the capsule adherent, and the cortex wasted. The waxy appearance is maintained to the last, and serves to distinguish it from the granular contracted kidney, which is red in colour.

Diagnosis.—This may be conveniently tabulated as follows, taken from Aitchison's "Medical Handbook," pp. 136, 137 :—

<i>Acute or Chronic Bright.</i>	<i>Cirrhotic Bright.</i>	<i>Waxy Bright.</i>
Develops insidiously; or there is chill, fever, and lumbar pain. Sometimes presence of an obvious cause.	Develops slowly, without chill; cause not so obvious.	Develops slowly, and cause very obvious; evidences of waxy disease in other organs.
œdema, and in chronic form great dropsy.	Little dropsy.	Little dropsy usually.
No hypertrophy of heart in the acute; heart-sounds modified in the chronic.	Great hypertrophy of the heart and great tension in the blood-vessels.	No hypertrophy or tension.

Uremic symptoms common.	Uremic symptoms not so common.	Uremic symptoms rare
Urine diminished.	Urine increased.	Urine increased.
Urea diminished.	Urea diminished.	Urea normal.
Urine contains blood.	Urine contains no blood.	Urine contains no blood.
Specific gravity of urine at first high; low in the chronic form.	Specific gravity low.	Specific gravity low.
Urine dark, and deposits urates.	Urine pale, and no sediment.	Urine pale, and no sediment.
Albumen abundant.	Albumen small in amount.	Albumen small in amount.
Epithelial, granular, and blood-casts predominate; hyaline and fatty-casts; in the chronic form also tube-casts.	Hyaline casts predominate; no blood-casts; tube-casts are few in number.	Waxy casts predominate; no blood-casts; tube-casts few in number.

Treatment.—Maintain the general health in the best possible state by allowing only such food as is easily digested and nourishing. During any exacerbation of symptoms, restrict to milk alone, and treat as directed when the disease is acute. Exposure to cold and wet must be very carefully guarded against, and, where possible, the winter should be passed in a dry warm climate. Flannel should be worn next the skin, and care taken to keep the feet warm.

In No. 1, the bowels should be kept acting freely, and for this purpose magn. sulph. gr. 20, with magn. carb. gr. 10, and peppermint water to half an ounce, may be given three times daily, or night and morning as required. Diuretics are of service, and none is better than the combination of the tinctures of digitalis and perchloride of iron. Should uræmic convulsions threaten, give large doses of bromide of sodium, gr. 20, and chloral gr. 10 by the bowel, place in a hot air-bath, or hot pack, or give $\frac{1}{8}$ gr. of pilocarpine whilst in the bath, and administer chloroform or ether with care.

In No. 2, arterial tension may be lowered by small and oft-repeated doses of nitro-glycerin ($\frac{1}{100}$ gr.), and by free purgation with the magnesium salts.

In No. 3, every effort should be made to counteract chronic suppuration or drain out the system from whatever source, and iron is especially indicated. Cod-liver oil may be given either alone or combined with phosphorus.

CHAPTER XIII.

GENERAL DISEASES.

ACUTE MILIARY TUBERCULOSIS. — **Definition.** — An acute, febrile, general disease, produced by the presence in the tissues of the tubercular bacillus, and which arises, in the majority of cases, as a consequence of special hereditary predisposition.

This disease is seen in children of all ages, but in very young subjects it is usually widely distributed, while in older children special cavities are more likely to be selected.

Causes.—Hereditary predisposition, which is usually very strong; lowering complaints and insanitary conditions; measles; whooping-cough; typhoid fever; the presence of softening, cheesy matter in any part of the body, as a chronic empyema, softening, caseous glands, and cheesy pneumonia. Where the predisposition is strong, a severe shock to the system, as from a blow or fall, may determine the outbreak.

Symptoms.—These may begin gradually or suddenly. In the majority of cases the onset is gradual, the child passing imperceptibly from health to sickness. It is less brisk and lively than usual, and, instead of playing about, prefers to act the part of an onlooker in those games it was its custom and delight to join in; its appetite is poor; it looks pale, and loses flesh; the conjunctivæ have a bluish colour, and there is a dark discoloration under the eyelids. The temperature at this time is of the hectic type, 101° F. to 104° F. at night, falling to normal in the morning, and, instead of rising after the night's rest rosy and cheerful, is seen to be pale and

distressed looking. After a week or two of this hectic state, more definite symptoms are added; usually cough begins to give trouble, and some loose rales are heard at the apex or elsewhere; or, again, the child may suffer from dyspnoea, due to tubercles scattered through the lungs. The choroid should always receive careful examination for miliary tubercles, the presence of which often enables one to confirm the diagnosis in a doubtful case. At this time, slight oedema of the feet and legs is often seen, and a trace of albumen may be found in the urine. Examination of the abdomen shows it to be rather flattened than distended; there is no tenderness and no enlargement of either liver or spleen. An eruption of spots, larger than those of typhoid, and more rosy in colour, is noticed in some cases. In very young children, the above symptoms progress, and the child dies from exhaustion, which is often accompanied by diarrhoea. In older children, it is usual for local symptoms to arise, and these cases very often are brought to a rather sudden termination by the onset of tubercular meningitis or broncho-pneumonia.

Sometimes the kidneys and bladder are affected, or it may be the stomach, liver, intestines, or spleen.

The duration of the disease in young children is usually six weeks or two months; in older children it may be much shorter if special organs are attacked.

Morbid Anatomy.—The grey granulation is found in nearly all the organs and tissues of the body. It is a firm, grey, translucent, projecting nodule, varying in size from a pin's head to a millet seed. In children its colour quickly changes to yellow, and it becomes opaque. The granulations follow the ramifications of the finer arteries; they are seen growing into their lumen, and in some cases blocking them completely.

In the Intestines, the granulations are found mostly in the small intestine, lying in the submucous tissue, and in the acute form of this disease they rarely give rise to ulceration.

In the Liver, they are developed on the smallest ramifications of the hepatic artery, and are seen under the serous coat.

In the Spleen, all kinds of granulations may be found, and even large cheesy masses, increasing its size very much.

The Kidneys and Bladder may be studded with the granulations.

The Bronchial and Mesenteric Glands are always enlarged and cheesy, or they may be in a state of softening.

Diagnosis.—From Typhoid Fever.—This is often impossible at first, but the following points are important: Tuberculosis has no definite onset; its temperature is very variable, and may reach 104° F. in the evening, often falling to normal in the morning; the abdomen is not swollen and tympanitic; and the spleen is natural in size. The expression is quite calm and composed in typhoid, but it is haggard and distressed in tuberculosis.

The following is an important grouping of symptoms in this disease, viz.: a very gradual passage from health to sickness; loss of appetite and spirits; wasting and pallor; fever at night; a distressed look and oedema of the lower limbs.

Prognosis.—This disease is fatal.

Treatment.—Where the tendency to tubercle is known to be a family failing, very special measures should be taken to keep the health of the children in the best possible state. Such children should sleep in well-ventilated rooms, should have plenty of out-door exercise, and be warmly clad. They should not be taught too early, and no forcing in this direction allowed. The mother should not suckle her baby, but a healthy wet-nurse be substituted. All digestive and bronchial troubles should receive prompt treatment and attention, and convalescence from the exanthemata made as complete as possible. It is good practice to advise a month or two at the seaside every summer for such children.

When the disease has declared itself, the strength should be maintained by beef-tea, beef-extracts, jellies, milk, cream, and port wine or other stimulant; cod-liver oil, either alone or in emulsion form, should be given; pure air and bright sunshine

are most important. *Creosote* is believed to have a beneficial action on tuberculous processes; it should be given in large and increasing doses, beginning with a minim three times daily and increasing to five or even ten minims. It may be given in perles, in pills, or in mixture; it may be inhaled as vapour-creosoti, or injected into the lung or trachea. The active principle of it, guaiacol, has been used both hypodermically and by the mouth; in the former way with sterilized olive oil, 5 per cent. solution, and by the mouth made up with tincture of gentian, rectified spirit, and sherry wine. *Iodoform* is useful in some cases; it may be given in powder with sugar in $\frac{1}{2}$ to 2-gr. doses, or it may be combined with guaiacol and given hypodermically, 1 or 2 per cent. iodoform being added to the olive-oil solution, and 1 c.c. of this mixture injected, and gradually increased to 3 c.c. or even 4 c.c. Complications, such as digestive troubles, diarrhoea, bronchitis, and such-like, should be dealt with as they arise.

RICKETS.—**Definition.**—Rickets is a disease of infancy, characterized by impairment of nutrition, alterations in the bony skeleton, with weakness of muscles and ligaments, and by nervous disorders.

Causes.—*Predisposing.*—Cold and damp climates, especially where there are sudden changes of weather; overcrowding; syphilis; premature birth; and a delicate state of health of the mother during pregnancy. It is very doubtful whether it is hereditary or not.

Exciting.—Impure air and want of sunlight; unsuitable food during the first year of life, and especially an insufficient supply of animal fat and proteids; starchy food and too much cow's milk; gastro-intestinal catarrh; deficiency of phosphates in the milk.

Symptoms.—The symptoms proper to rickets are preceded by digestive derangements (vomiting, diarrhoea, etc.), fretfulness, flatulent colic; and there may be slight fever at night, with restlessness and frequent micturation. The onset is marked by three special symptoms, viz. (1) sweating about the head and

neck; (2) throwing off the bedclothes at night; (3) tenderness over the body generally, on being handled.

The sweating is profuse, and occurs chiefly during sleep. The throwing off of the bedclothes gives rise to catarrh of the bronchial tubes, of the stomach, or of the bowels.

The earliest manifestation of the disease is seen in the beads at the junction of the ribs with their cartilages—these beads are most marked in the lower ribs, and examination after death shows them to be more prominent on the inner than on the outer aspect of the bone; next we have the round spots of thinning in the parietal and occipital bones, constituting the “craniotabes” of Elsässer,—they are found from the third to the eleventh month; symmetrical swellings form on the frontal and parietal bones, and the top of the head is flattened, or the skull may be elongated fore and aft, or be markedly “dolichocephalic;” the edges of the sutures are thick and irregular, and the veins over the scalp are prominent; the teeth are late in appearing; they come out in wrong order, or are cut “cross,” and their structure is fragile and subject to early decay.

The thorax is grooved as follows:—

1. The chest has a broad, shallow depression, beginning outside the nipple on each side; it extends obliquely from above downwards and outwards, and is situated just behind the beads.

2. A transverse groove running from the junction of the body of the sternum with the ensiform cartilage on either side outwards to the posterior axillary border; this is Harrison's sulcus, and marks the attachment of the diaphragm. The costal cartilages and sternum are carried forward from increased convexity.

The spine is often bent, the natural posterior curve being increased.

The clavicle often shows a swelling about the middle, due to green-stick fracture and callus.

The upper limbs have the lower ends of the radius and ulna

enlarged, and both these bones and the humerus are bowed outwards.

The lower limbs show much the same changes as the upper, the ends being enlarged and the shafts bowed outwards.

The ligaments suffer from nutritional changes due to interference with their blood-supply, and yield, causing looseness of joints.

The muscles are thinned and poorly nourished.

The liver is depressed, and in some cases enlarged.

The spleen is enlarged in a certain number of cases, and may attain a great size.

Nervous disturbances are common, such as laryngismus stridulus, and tetany, which are nearly altogether restricted to rickety children.

Convulsions are very common.

In addition to these peculiarities, rickety children are pale, flabby, and feeble, and muscular debility is always well marked; the act of respiration is interfered with, and the lower portion of the chest falls in with each contraction of the diaphragm, so that the danger of pulmonary affections is greatly increased. The abdomen is prominent, owing partly to the depression of the viscera, and partly to the gaseous distension of the intestines and the lax condition of the abdominal wall. There is a marked tendency to laryngeal and bronchial catarrh, and these complications are very common, and should be carefully guarded against. The bowels are generally relaxed, and the motions white, green, or dark in colour, and offensive.

Morbid Anatomy.—The composition of the bones is interfered with thus—

<i>Normal.</i>	<i>Rickets.</i>
Inorganic constituents = 65 %	Inorganic constituents = 35 %
Animal matter = 35 %	Animal matter = 65 %

The liver, spleen, and lymphatic glands are enlarged; there is a deficiency of the calcium salts, and the bony spaces

between the trabeculæ are filled with juicy material. Hypertrophy of the brain and chronic hydrocephalus are often present.

Prognosis.—This is not serious in itself, but is so chiefly from such complications as bronchitis; broncho-pneumonia; collapse of the lungs; whooping-cough; laryngismus stridulus; and splenic anæmia.

Treatment.—Proper and suitable feeding is the first essential; next keep the digestive system in good working order, and counteract any tendency to vomiting or diarrhœa; cod-liver oil is of great service, and may be given in emulsion form. Kassowitz recommends phosphorus— $\frac{1}{12}$ gr. dissolved in almond or olive oil.

Plenty of fresh air and especially sea-air; cold or tepid baths, ending up with the cold douche, and followed by vigorous friction; salt-water baths, massage with the oiled hand, and warm flannel clothing next the skin, are highly important adjuncts to other means.

The phosphate of sodium with tartrate of iron (see R 32) is very useful, or the syrup of the phosphate or citrate of iron may be given. Diarrhœa is often troublesome in rickets, and when the motions are curdy and offensive, a small dose of castor-oil should be given, followed by a grain each of grey powder and Dover's powder. If the diarrhœa persist, full doses of subnitrate of bismuth—10 grs. in 2 drachms of syrup and water—should be given every four hours to a child six months old.

Laryngismus, convulsions, and tetany may be controlled with chloral hydrate and bromide of potassium or ammonium, given in doses according to age, and, in cases where the child cannot swallow these drugs, they may be given by the rectum with even more effect than by the mouth.

During the early stages of rickets, care should be given to supporting the back, and where there is much tenderness of the bones generally, the horizontal position will be best.

CONGENITAL RICKETS. — **Synonyms.** — Fœtal rickets, Fœtal cretinism, and Achondroplasy. In rare cases, children

are born with enlarged epiphyses, deformed bones, and beaded ribs; they are usually still-born, or survive only a few hours. The limbs are very short, and the fingers stunted. In the skull the bones forming the base are found fused together in a peculiar way, and on this account the condition was regarded as one of *fœtal cretinism*, but the investigations of Professor Symington and A. Thompson tend to show that it is distinct both from rickets and cretinism; there is arrested or defective enchondral ossification in intra-uterine life, to which the name of *chondrodystrophia fœtalis* has been given. The flat bones of the skull formed from membrane are fully grown; the bones at the base formed from cartilage are dwarfed and prematurely united.

ACUTE RICKETS.—*Synonym.*—Infantile scurvy.

Symptoms.—This disease is usually seen in children from six to eighteen months of age. Those affected are wasted, flabby, and very anæmic, and have been brought up under circumstances favourable to the development of rickets. There is much evident pain on any movement; the gums are spongy, and bleed readily; purpuric spots are common on the skin; the lower limbs are excessively tender, shiny, and tense, and cylindrical swellings are seen about the epiphyses; hæmorrhage from the kidneys is frequent. Drs. Cheadle and Barlow both incline to the opinion that these are cases of scurvy, brought on by improper feeding, and especially the absence of milk from the diet. Others look upon them as exaggerated cases of the anæmia so common in severe rickets.

LATE RICKETS.—This term is applied to the onset of rickets after the age of two years. It is very rare.

SPORADIC CRETINISM.—*Synonyms.*—Congenital myxœdema, or myxœdema of childhood.

This is an affection which is closely allied to endemic cretinism and to myxœdema, and is due to congenital absence of, or want of function in the thyroid gland; it is associated with imperfect development of the intellect and of the body.

Etiology.—In the majority of cases the causes of this affection are unknown, and the subjects are quite often found

to be members of otherwise healthy families; the marrying of blood relations, alcoholism in one or both parents, syphilis, and tubercular disease, have been credited with giving rise to it, and so also has worry or mental shock to the mother during pregnancy.

Symptoms.—The condition is rarely observed before the end of the second year, or the child may be thought “backward.” When the affection is developed, the body is seen to be stunted in growth, and the head, hands, and feet are large in proportion to the trunk and limbs; the face is broad and wanting in expression; the eyes are dull, and situated far apart; the nose is broad and flat (negro nose); the lips are coarse, protruding, and broad; the tongue is large, and often protrudes between the teeth, and there is well-marked dribbling of saliva. The limbs are short and rickety-looking; the skin is sallow and wanting in elasticity, so that it hangs in folds; the hair is short and scanty, and the scalp is dry and scurfy. The thyroid gland is usually absent, but occasionally it is present, and may be enlarged. In many cases large fatty tumours are found between the sterno-mastoids, above the clavicles, and in the axillæ. The temperature is subnormal, and these patients are very sensitive to cold; the urine is passed in large quantity, it contains no albumen, and the urea is diminished; there is no leucocytosis, but the hæmoglobin is greatly diminished. The mental condition varies from mere backwardness to complete idiocy, and in the majority of cases a medium state exists.

Pathology.—The thyroid gland is absent or has undergone cystic or fibro-cystic degeneration; the cranial bones are thickened, and the diploe diminished; the brain is small, and there is an increase of the intraventricular and subarachnoid fluid. According to Virchow, cretinism is the indirect result of premature ossification of the spheno-basilic suture, and, in consequence of this, a necessary arrest in growth of the parts at the base of the brain occurs.

Prognosis.—This is favourable if treatment is begun early;

mental improvement is nearly always seen. Treatment will have to be persisted in for a long period, and it may be for the lifetime of the patient.

Treatment.—This consists in the administration of the carefully dried thyroid gland of the sheep;* it may be given in powder or tablet form, and a small dose (3 grs.) daily is enough to begin with. The dose should be gradually increased until the full effect is obtained. When the patient is cured, a dose sufficient to maintain a proper condition of health should be given. The first effect noticed is a decrease in the body-weight and increase in stature; then the skin becomes moist, the expression becomes more intelligent, and the anæmia diminishes. After a period of loss the body-weight begins to increase, and this is the surest sign of the approach to a “cure.” When the body-weight corresponds fairly to the height of the child, the quantity of thyroid given may be diminished until the smallest dose compatible with health is reached.

SYPHILIS.—This disease in childhood may be either (1) Acquired or (2) Hereditary.

1. ACQUIRED SYPHILIS.—**Causes.**—The virus may be conveyed by a wet-nurse or by the act of vaccination. The wet-nurse infects generally through a sore nipple or sore mouth, but it is necessary for the baby to present an abraded surface, and this it may readily do by means of a sore lip; it may further be inoculated with the discharges from the genitals of the nurse, conveyed to it on the hands. There is, at present, no evidence to show that the milk of a wet-nurse who is suffering from syphilis can infect an infant, and it is probable that, even if the virus of syphilis was present in the milk, it would not inoculate, as the poison must be brought into direct contact with the blood. The coryza of a syphilitic infant will infect the breast of a healthy wet-nurse, and so also will the ulcers and fissures about the mouth; but they will not infect the mother’s breast: this is Colles’ law, and it follows from it that no syphilitic infant should be suckled by any one except its mother.

* See Appendix, p. 231.

With regard to vaccination, it is important to remember that an interval of a month or six weeks must elapse between the time of vaccination and the formation of a chancre at the seat of inoculation (Hutchinson). It often happens that vaccination is followed in a week or so by symptoms of syphilis; but there is no chancre at the seat of inoculation in these cases, and they therefore cannot be looked upon as cases of vaccino-syphilis. In these cases evidences of syphilis in one or other parent will rarely be wanting.

2. HEREDITARY SYPHILIS.—In this form the foetus receives the poison at some period of intra-uterine life. There is no primary sore. The effects of the poison on the foetus are variable: thus, if both father and mother are suffering from syphilis at the time of conception, the mother will usually miscarry at a variable time, and give birth to a dead and shrivelled foetus; the placenta will be found diseased in these cases. Again, the infant may be born at full term, but dead, or it may live a few hours; it is small and shrivelled, has a feeble hoarse cry, and the fingers and toes are blue. It may be born at full term, apparently well nourished, but with evidences of syphilis on it, such as pemphigus, etc.; or, lastly, it may be born healthy and well nourished, without any visible evidence of the disease anywhere. The more recent the disease, then, in the parent or parents, the more strongly marked will its evidence be in the child. The father may infect the foetus through the spermatozoa; or the mother may become infected by the husband, and she, in turn, infect the foetus through the placental blood, but this is rare after the seventh month of intra-uterine life. The mother may inoculate the foetus during labour. The following is A. Baginsky's summary of the etiology of congenital syphilis (taken from Ashby and Wright, pp. 428, 429):—

1. If the father and mother are both syphilitic, a syphilitic infant is generated, or the mother may miscarry; the more severe and recent the syphilis is in the parents, the more likely is the foetus or infant to suffer severely.

2. If the father is syphilitic and the mother healthy, the infant may be syphilized at the time of conception, and this may happen when the father is affected by tertiary as well as secondary syphilis. Under these circumstances, the mother may be syphilized either through the spermatozoa or from the foetus through the placental circulation; she may apparently escape, but such women cannot be inoculated.

3. If the mother only is syphilitic, the children may escape; certainly mothers with tertiary symptoms may bring forth sound children.

4. If the father and mother are healthy at conception, and the mother becomes affected during pregnancy, the foetus becomes infected through the placental circulation; an infection during the act of birth is possible.

Symptoms.—If the disease is manifest in the child at birth, the symptoms are severe. The child is emaciated; it snuffles, and has a hoarse cry. Pemphigus appears on the palms and soles; there are fissures and ulcers at the corners of the mouth and nostrils; and the child survives a few hours or a day or two.

A very large proportion, however, of syphilitic children are born apparently healthy, but they show symptoms generally during the second month. These are often preceded by restlessness, fever, diarrhoea, or dyspepsia, or the outbreak may be determined by one of the exanthemata; thus the rash of measles may subside, leaving the syphilitic eruption in its place.

Wakefulness at night is one of the earliest symptoms; the child cries, and cannot be pacified. This is likely due to pains in the bones.

Snuffles.—The baby is supposed to have got “the cold” in its head; it breathes in a noisy fashion, and a discharge of an irritating nature causes fissures and excoriations around the nostrils.

Skin-eruptions appear about the same time as the snuffles, and may be erythematous or papular, vesicular or pustular, or

there may be mucous patches about the anus, genitals, or mouth. The colour of the rash is bright red at first, but soon begins to fade, and it assumes a coppery or lean ham colour, at the same time becoming polished-looking and shining. The commonest rash is "an erythema."

Larynx.—The mucous membrane of the larynx is affected, being swollen and often ulcerated, and there is, as a consequence, the hoarse cry of syphilis.

Skin.—The skin becomes pale, sallow, yellowish, or earthy in tint (*café-au-lait*), is dry, inelastic, and hangs in folds.

The hair of the scalp and eyebrows sometimes falls out, and the nails become shrivelled and fall off.

Lesions of Internal Organs.—In the lungs of infants dead-born, or dying soon after birth, gummata and fibroid induration may be found. Virchow has described a white hepatization which is a chronic pneumonia. The liver often contains gummata. The spleen is enlarged and indurated; it may contain gummata. The bones are affected both early and late in the course of the disease. The eoryza is followed by caries of the nasal bones, and falling in of the bridge of the nose. The long bones are affected with periosteal nodes, and these often, breaking down, lead to caries. The ends of the long bones—the humerus, femur, radius, and tibia—are affected near their epiphyses with a syphilitic epiphysitis. The teeth of the first set are cut early, and soon decay; those of the second or permanent set are misshapen, and the upper central incisors are dwarfed, peg-shaped, and have a central notch in their cutting edge (*Hutchinson's teeth*). This notching is usually symmetrical, but in rare cases only one of the upper central incisors is malformed; in a considerable number of cases the teeth show no deviation whatever from the normal standard. The eyes become affected, commonly about puberty, with interstitial keratitis, iritis, or choroiditis; and there may be sudden loss of hearing without otitis. These three lesions—of the teeth, of the eyes, and of the ears—form "*Hutchinson's triad*."

RELAPSED SYPHILIS.—This is the name given to those cases where the symptoms following birth were so slight that the disease was overlooked; during the second or third year condylomata, ulcers about the mouth or anus, painless enlargement of one or both testicles, or various skin-eruptions, make their appearance.

Diagnosis.—This is not difficult, and most reliance is to be placed on the snuffles, the eruptions, the hoarse cry, and the colour of the skin. After the eruption of the permanent teeth, the notched and pegged upper central incisors are pathognomonic.

Treatment.—Treatment begun during pregnancy is often successful in preventing the taint from being transmitted to the foetus; but it must be begun early. In the large majority of cases, however, we are first consulted about the coryza, and when the diagnosis is made mercury should be given without delay. Inunction is by far the easiest and most efficient, as it is attended by but little inconvenience and is always effectual: 10 grs. of dilute mercurial ointment may be rubbed into the axillæ or applied on the child's binder every morning, and the quantity and frequency varied according to the effect produced. Another favourite way of giving mercury is in the form of grey powder, and of this $\frac{1}{2}$ gr. or 1 gr. may be given two or three times daily in a little sugar: occasionally diarrhœa follows its use, when $\frac{1}{2}$ gr. of Dover's powder should be added, or 1 gr. of tannic acid; some prefer to give calomel $\frac{1}{6}$ to $\frac{1}{2}$ gr. with one grain of saccharated carbonate of iron night and morning. The mercurial bath may be substituted for the inunction: it is made by dissolving 10 grs. of the perchloride of mercury in 2 gals. of warm water, the child being kept in this for five minutes each morning, and the amount of the mercurial, as well as the length of time in the bath, may both be cautiously increased. It is hardly necessary to say that care should be exercised that none of the water gets into the baby's mouth. This bath is useful in obstinate cases, and especially where skin eruptions prove chronic or obstinate. While

these remedies are in use, take a look at the gums every day, and if they become spongy or the mouth shows any signs of stomatitis, stop all forms of mercury for a time and substitute iodide of potassium. Great cleanliness should be enjoined, and the nares and anus kept free from all discharges; it is a good plan to smear a little yellow oxide of mercury ointment over and about these orifices. The eryza should be treated by keeping the nostrils clean, for which purpose injections of a 10-gr.-to-the-ounce solution of boracic acid may be used, or a solution of nitrate of silver 1 gr. to the ounce. Tertiary syphilis is likely to be chronic, the ulcerations of the skin, the caries of bone, and the corneal affections often remaining for months in a stationary state. Calomel in powder is the best application to corneal ulcers: iodoform and yellow oxide of mercury ointments are useful for the skin affections, and a solution of nitrate of silver 10 grs. to the ounce should be brushed on specific ulcerations of the mouth, palate, or pharynx. It should be borne in mind that mercury employed in infancy is attended by much danger to the development of the child's permanent teeth, and for this reason it is desirable to use as little as may be, and not to prolong the course unnecessarily.

The diet should be carefully managed, so that the digestive functions may be kept in the best working order, especially if the child has to be artificially fed, as such infants are very prone to suffer from dyspepsia and mal-nutrition, and, if it is at all possible, the child should be suckled by its mother. Abundance of fats and proteids is necessary, and if the cachexia is well marked, a few drops of cod-liver oil two or three times a day may be given with 5 drops of the syr. ferri iodidi. A life as much as possible in the open air, or a change to the seaside or country, should be insisted on, and the child should be warmly clad at all times.

RHEUMATISM.—*Causes.*—*Exciting.*—Exposure to cold and wet; chilling of the surface when the body is heated; scarlatina; and excessive muscular exercise.

Predisposing.—Hereditary tendencies; sex—it is more common in females during childhood; age—it is rare before the fourth year, and becomes common after the sixth.

Symptoms.—These may begin suddenly with chilliness, and sometimes vomiting; the appetite is lost; there is much thirst; and the temperature is elevated to 102° F. or so; pain is complained of in one or more of the larger joints (the knee, elbow, wrist, or ankle, most commonly); the joint is swollen, red, and painful, and the disease shows a peculiar tendency to flit about from one joint to another, not infrequently returning to the one originally attacked; there is little or no perspiration, the profuse sour sweating so common in the adult being rarely seen in the child. Anæmia is constantly present, and relapses are common.

There are many variations in the above symptoms which require notice, and, first, as to the joint affection.

This is often so slight as to escape notice altogether, the child having, perhaps, only a little puffiness of one ankle or wrist, and making little or no complaint. Examine the heart in these cases, when you will seldom fail to find a systolic murmur at the apex.

In other cases, the rheumatic inflammation is limited to the tendons, as in stiff neck (torticollis), or it may affect only the hamstring tendons at the back of the knee. In the latter, it is very striking the unwillingness the child displays towards standing, and, when it makes the effort, it cannot put the heel to the ground, but cries with the pain at the back of the knee. Sometimes this form of rheumatism supervenes during the night, and the child, on getting out of bed in the morning, can only walk on its toes.

The *associations of rheumatism* are highly important; by their presence mild cases are rightly diagnosed, and the true nature of the illness made manifest. They are as follows:—

Heart-Disease.—*Endocarditis.*—In the majority of cases, this appears with the swelling and pain in the joints, but quite

often it is the only evidence present of the rheumatic state. It is subacute, attacks chiefly the mitral valve, and declares its presence by a soft blowing murmur at the apex, systolic in time. In consequence of the mildness of the symptoms in many cases of rheumatism in childhood, this endocarditis is often overlooked. Reduplication of the second sound at the apex, or a post-diastolic rumble, is another sure sign of endocarditis. The late Dr. Sturges drew attention to the fact that in children, when rheumatic attacks recur, the heart is very liable to suffer in all its structures at the same time, so that endocarditis, pericarditis, and myocarditis are often seen together; as a rule, however, endocarditis occurs first and alone.

Pericarditis.—This, again, may be the sole evidence of the rheumatic state, and, like endocarditis, from the mildness of the joint symptoms, is often overlooked. It is rarely acute, and is more liable to appear in second than in first attacks of rheumatism. It has a tendency to become subacute, chronic, and intermittent, breaking out anew with each fresh manifestation of rheumatism. It is most common when the heart has become hypertrophied and dilated. Its symptoms are set forth at page 138, *et seq.*

Pleurisy.—Most common on the left side; is seen in about 10 per cent. of cases of rheumatism in childhood.

Pneumonia.—This is frequently overlooked, owing to the pain of examining the back of the chest. Loss of pulse respiration ratio, with a temperature of 104° or 105° F., should suggest its presence. There are three forms of it in rheumatism. (1) The limited form, where it is associated with pleurisy; (2) the more extensive form, associated with mitral disease and pericarditis; and (3) the embolic form, also associated with valvular affections.

Bronchitis.—Occurs in nine per cent. of cases, according to Lébert.

Tonsillitis.—This may occur before, during, or after an attack of rheumatism. Sometimes it ushers in an articular rheumatism, or it may occur without any joint affection in

rheumatic subjects. About 30 per cent. of all cases of tonsillitis in childhood are rheumatic.

Fibrous Nodules.—These vary in size from a pin's head to an almond, and are found chiefly about the joints, especially at the back of the elbow, about the patella, the malleoli, the vertebral spines, the crista ilii, the clavicles, the temporal and occipital ridges, etc.; they are not tender; they appear in crops varying in number from one or two to hundreds. Their duration is from a few days to several months, and they gradually increase in size during this period. Examined microscopically, they are seen to consist of nuclear-growth in all stages of transformation into fibrous tissue. These fibrous nodules indicate concurrent and usually progressive cardiac mischief, and when they are numerous they are of very serious omen and betoken a fatal ending.

Chorea.—This is an associate of rheumatism in a very large number of cases—about 57 per cent. “It may occur at any point in the series of rheumatic symptoms; when it is extreme and combined with severe endo- or pericarditis, it is of great gravity. Nearly all fatal cases of chorea are thus associated, and are rheumatic” (Cheadle *).

Erythema.—Of these, erythema marginatum and urticaria, or nettle-rash, are the most common; erythema nodosum is not so common. Purpuric erythema, the Peliosis rheumatica of Schönlein, may appear quite apart from other symptoms. It is probably caused by thrombosis of small subcutaneous vessels, which is favoured by the hyperfibrinous condition of the blood in rheumatism.

Thrombosis and embolism are predisposed to by the highly fibrinous condition of the blood.

Night fevers, headaches, and incontinence of urine are stated to be especially associated with the rheumatic state in children by Dr. Goodhart.

Diagnosis.—This is usually easy in a typical case. You will

* “Cyclopedia of the Diseases of Children” (Keating), vol. i. p. 805.

do well to diagnose all cases as rheumatic where the symptoms are very slight, such as pain confined to a single joint, or in a tendon or its sheath, or even where there is merely some stiffness; and the important point to bear in mind is that these slight cases are genuine rheumatism, and bear with them all the possibilities of cardiac inflammation. When endocarditis is present, it is almost always rheumatic—80 per cent.; and, if you get fibrous nodules, they are conclusive. The family history should be carefully inquired into in every case.

Prognosis.—This must always be given cautiously, and the condition of the heart taken as your basis. If the heart is healthy, then an attack of rheumatism in a child is not serious. If the heart becomes affected during the attack, much may be done to limit the amount of mischief, but always remember the tendency of the attacks to die down and light up again, each attack carrying the damage a little further than before. The copious and repeated evolution of fibrous nodules points to a fatal termination.

Treatment.—Begin with a dose of calomel; keep the child strictly confined to bed with a flannel night-dress, and between the blankets. Roll all painful joints, tendons, etc., in cotton-wool, and, if any particular part is very tender, apply a lotion of bicarbonate of sodium and Battley's solution on lint (see R 27). Salicylate of sodium with liq. ammon. acet. (see R 28) should be given every three hours, and if the child is restless or suffering much pain, a small dose of Dover's powder (1 or 2 grs.) may be allowed at bed-time. It is necessary to guard against the depressing effect of the salicylate, and it should be omitted as early as possible and salicin substituted for it. Dr. Cheadle recommends that the salicylate should be stopped when peri- or endocarditis comes on, and the bicarbonate of sodium given in 10-gr. doses. Quinine should be given at this juncture, and the hydrobromate is less liable to sicken than the sulphate; it may be given alternately with the alkali.

The associates of rheumatism, especially endo- and pericarditis, must be anticipated, and the heart receive careful

examination at frequent intervals. They should be treated on general principles.

The diet must receive careful attention, and nothing but milk and light soups given while the temperature is elevated. When the temperature becomes normal, a more generous diet may be allowed. Starches and sweets should not be given for some time, and rest in bed for at least ten days after all symptoms have subsided should be enjoined.

Children of rheumatic parents, and especially those who have had rheumatism, should be carefully warned against and protected from overheating, chill, and fatigue.

Hyperpyrexia is very rare, and should be met with quinine and the cold bath.

RAYNAUD'S DISEASE.—*Synonym.*—Spontaneous gangrene of the extremities.

First described in 1862, this affection consists of more or less continuous and complete spasm of the arterioles of the extremities, usually occurring symmetrically and less frequently upon other regions, such as the nose, the ears, or buttocks. This spasm, if sufficiently long continued, gives rise to more or less extensive trophic changes, even to death of the parts involved.

Causes.—Little is known about the etiology of this affection, but it may be said that it is seen most commonly during the winter months, and is associated with a neurotic family history. In some cases there is a history of malaria, and paroxysmal hæmoglobinuria is frequently seen during the course of the disease. Insanitary surroundings, poor food, cold and damp, and convalescence from depressing diseases, especially measles, and less frequently after scarlatina, typhoid, variola, or varicella, may be cited as predisposing to this affection.

Symptoms.—Raynaud divided this affection into three stages; (1) Local syncope; (2) Local asphyxia; and (3) Gangrene.

(1) **Local Syncope.**—In this stage, after exposure to slight cold, one or more of the fingers becomes pale and cold, cutaneous sensibility is abolished, and the digit feels dead. After

a short time the blood returns, and this reaction is often quite painful.

(2) **Local Asphyxia**, or cyanosis, may be the first manifestation of the disease, or it may be preceded for a time by frequent attacks of local syncope. After exposure, or apparently without cause, one or more fingers or toes become cold and somewhat swollen; tingling or shooting pains are often complained of; and hyperæsthesia or anæsthesia of the parts may be observed. One finger or toe, or several digits may be affected on both the hands and feet, and after a variable duration the cyanosis gradually passes away, being often accompanied with redness and burning pain.

Hæmoglobinuria is frequently seen during this stage; it is usually preceded by yawning, drowsiness, nausea, and pain at the ensiform cartilage. General symptoms are very slight, and the temperature rarely exceeds 100° F.; if it rises higher than this, other causes are at work.

(3) **Gangrene**.—Should local asphyxia persist for any considerable time, the vitality of the part suffers and gangrene takes place. Small blebs form on the summit of the affected digits; these rupture, discharging a blood-stained serum, and leaving little white cicatrices behind. In more severe cases, the part assumes a dark violet or blackish colour, and passes through a condition not to be distinguished from senile gangrene; one or more phalanges may be lost, or even more extensive portions.

Prognosis.—This is good as regards the life of the patient, but it should be remembered that this affection may assume a chronic or periodic aspect, recurring every winter and disappearing with the approach of warm weather. The child may be left with deformed fingers or toes and the tactile sensibility greatly blunted or entirely lost. A fatal result may take place in very debilitated children.

Treatment.—Great care should be exercised to guard against chilling of the extremities, and the child must wear warm gloves and stockings when the weather is at all cold. Warm

flannel clothing should be worn next the skin, and the child encouraged to exercise itself when out-of-doors. The general health should be maintained by the most generous diet the child can digest, such as pounded meat, meat juices and extraets, eggs, milk, and well-cooked vegetables, and stimulants may be given if their use is considered desirable.

Quinine has produced good results in some cases, and should be tried; iron, arsenic, or ammonia and bark are also recommended; nitrite of amyl has been tried on theoretical grounds, but without much success.

Galvanism is beneficial, applied in the form of descending currents either to the spine or down the affected extremities. In the former case the positive pole is applied over the fifth cervical vertebra, and the negative pole near the commencement of the cauda equina; while in the latter, the negative pole is applied to the closed fingers or the toes. Barlow has obtained most satisfactory results by placing one electrode on the upper part of the limb and the other in a basin of warm salt water, in which the affected extremity is immersed. The current should be opened and closed at frequent intervals, and be as strong as the patient can bear; it should be used for about ten minutes daily.

APPENDIX.

MILK-STERILIZERS.—By sterilized milk is meant milk which is sterile or free from germs of any kind whatever. Soxhlet has invented a sterilizer, by which the child's supply of milk for the whole day can be prepared at one time, and kept in separate bottles till required. Other sterilizers bear the names of Eseherich, Siebert, Hawksley, and Aymard.

BARLEY-WATER.—This is made by placing one tablespoonful of barley-meal in a pint and a half of pure water, and letting it simmer gently for an hour, when it is strained.

WHEY.—The ordinary "rough-and-ready" way of making whey, by gently heating (not boiling) sweet milk and buttermilk in equal proportions, and draining off the whey when the mixture curdles, will do very well; but the more scientific way to make it is to warm a pint of milk to blood heat, and add a teaspoonful of artificial rennet; break up the curd thus formed, and, after it subsides, decant and boil the whey.

OATMEAL-WATER.—This is made by simmering gently for one hour a tablespoonful of oatmeal in a pint of water; make up to one pint.

ARROWROOT-WATER.—Two teaspoonfuls of arrowroot added to one pint of water; simmer for five minutes, stirring it all the time.

RAW-MEAT JUICE.—Mince finely the best rump steak, and add cold water to it in the proportion of one part of water to four of meat; stir well together, and let it soak for half an hour, cold. The juice should then be forcibly expressed through muslin, by twisting it (Cheadle).

Another method is to finely mince a pound of the best rump steak ;

place in an earthen vessel, with sufficient cold water to cover it; add some lump sugar, and let it stand for four hours. Strain through muslin (Ashby and Wright). Two or three ounces of the juice may be given in twenty-four hours to a child from five to eight or ten months.

Beef Tea is best made by cutting one pound of the best rump-steak into small pieces, and soaking it for one hour in one pint of cold water; it is then placed in a saucepan on a water-bath, and allowed to stew for three or four hours; at the end of this time, the quantity is made up to one pint, and strained to remove fat.

Veal Tea and **Mutton Tea** are made in the same way, and barley-water may with advantage be substituted in whole or in part for plain water. I find them very serviceable in the typhoid fever of children.

RAW-MEAT PULP.—This is prepared by scraping the best rump steak with a knife. It may be given to children ten or twelve months old, the juice being more suitable for younger children. It may be spread between thin slices of bread.

ANTIPYRETIC METHODS.—Quinine.—This drug may be given either by the mouth, rectum, or hypodermic syringe.

By the Mouth.—Use the acid hydrobromate. This salt is very soluble, 10 grs. of it dissolving in 1 dram of water; moreover, it is less liable to cause sickness than the sulphate; 2 to 10 grs. according to age, may be given, and repeated as necessity requires.

By the Rectum.—The neutral bisulphate should be chosen, and remember to give beforehand an injection either of soap and water or glycerin. The dose by the rectum should be double that given by the mouth.

By the Hypodermic Syringe.—The neutral hydrobromate should be used: 4 grs. dissolve in 1 dr. of water; $\frac{1}{2}$ dr. of this solution may be injected, and repeated if necessary.

Antifebrin may be given in 1-gr. doses under two years of age; 2 grs. from two to four years of age, and repeated if necessary. It requires careful watching.

Antipyrine may be used in the same way as the preceding, but the dose should be double that of antifebrin.

Phenacetin may be given in the same dose as antifebrin. They all require to be used with care.

Sponging.—This is a grateful and ready means of reducing moderate temperatures. The arms may be sponged and dried,

then the body and face, and next the lower limbs. The water may be tempered at first with a little warm added, if the child is very weak and nervous. Regular daily sponging should be used in the specific fevers, pneumonia, etc., and the addition of a little toilet vinegar or eau-de-cologne to the water will be refreshing and agreeable.

THE WET PACK.—This is applied by wringing a sheet out of cold water, rolling it round the body from chin to foot, and over it a warm dry blanket. If the temperature does not fall in half an hour, renew it, and so on till your object is attained. Watch the pulse, and be ready with stimulants; should the pulse show signs of failing, remove the pack. The cold pack is very useful in scarlet fever, measles, small-pox, and pneumonia.

BATHS.—The child may be put in the bath at 100° F., and the temperature of the bath rapidly reduced by the addition of ice or cold water. An ice-bag may be applied to the head, or cold water poured over the head at the same time. The child should be kept in the bath till shivering is produced. Watch the pulse, and have stimulants handy. The cold bath is very useful in the hyperpyrexia of typhoid, pneumonia, measles, and small-pox; but it is too depressing in scarlet fever and diphtheria.

Enemata of iced water are useful in reducing temperature, and may be tried before resorting to the stronger methods of the bath and pack, or in conjunction with them.

Ice-bags or ice-poultices may be applied to the head, chest, or abdomen. They are used a good deal at present in the treatment of acute serous inflammations.

HOT PACKS.—Wring a blanket out of hot water, and apply it round the body from chin to foot; roll a dry, warm blanket over this, and a thin mackintosh sheet over all. It may be renewed in one hour. This is a good remedy in the general dropsy of chronic Bright's disease, especially when the urine is scanty, and loaded with albumen.

Hot-air or Vapour Baths are very useful in acute nephritis when the urine is scanty and high coloured. They are best applied by means of a special apparatus, such as Allen's, but, in case of emergency, a vapour bath can be given readily enough by means of a bronchitis or ordinary kettle, and a small chair or stool can be made to do duty for a cradle.

MUSTARD BATH.—1 oz. of mustard should be made into a

cream with some hot water, and then gradually stirred into 1 gal. of water at 100° F. This bath is used in collapse from any cause, such as in the acute diarrhœa of young children, pneumonia, etc. It is also useful in the early stages of scarlet fever and measles, when the eruption is imperfectly developed or its appearance is delayed from any cause.

The Alkaline Bath.—This is prepared by adding $\frac{1}{4}$ oz. of sodium carbonate to each gallon of water used. It is useful in allaying the irritation present in such skin diseases as acne, scabies, and urticaria.

The Bran Bath is prepared by adding 2 ozs. of bran to each gallon of water. Mix the bran with a small quantity of boiling water first, and then add it to the water in the bath.

The Oatmeal Bath is made in the same way as the preceding, and both are useful in the same affections as the alkaline bath.

The Sulphur Bath is prepared by adding $\frac{1}{4}$ oz. of potassa sulphurata to each gallon of water. Used in scabies.

EMETICS.—*Ipecacuanha* is the favourite for children, and may be given in 5-gr. doses of the powder, or teaspoonful doses of the wine, with plenty of tepid water, till vomiting is produced.

Copper.—2 grs. of the sulphate may be dissolved in 1 oz. of water, and a teaspoonful given every ten minutes. This is a good emetic.

Alum.—Half a teaspoonful mixed in honey or syrup is useful in severe whooping-cough.

Apomorphia.—May be given subcutaneously in $\frac{1}{30}$ to $\frac{1}{25}$ gr., but it is too depressant for very young children, and requires watching.

NARCOTICS.—Children are specially sensitive to the action of *opium* and all its compounds, and this is particularly the case in all chest affections, such as broncho-pneumonia and bronchitis, so that extreme caution must be exercised in their administration, or their use entirely forbidden in these cases. In cases accompanied with acute abdominal pain, such as intussusception or acute diarrhœa, opium in the form of Dover's powder or liq. morphia hydrochloratis may be safely given in doses of 1 gr. of the former, or 1 drop of the latter, to an infant four months old. The hypodermic use of morphia is best avoided in children under a year. *Chloral* is chiefly used in convulsions and to procure sleep. Infants and children tolerate it well, and it may be given in 2-gr.

doses to young children every three hours ; its pungent taste may be covered by liquid extract of liquorice.

Bromides of sodium and potassium are safe drugs, and may be given in 5-gr. doses to young children every three hours without fear ; they are useful in quieting cerebral excitement and procuring sleep ; their combination with chloral is a common and favourite one. It should be remembered that a papular rash is liable to follow their use.

Belladonna and its alkaloid atropine are favourite remedies in pertussis, incontinence of urine, and as external applications. Children are very tolerant of belladonna, so that it is quite common to see adult doses prescribed, and these, too, without any harm following. Atropine should be used with caution, or avoided in young children : one minim of the liquor, which is equal to $\frac{1}{100}$ gr. of the salt, may be given to a child of five years old, and it may be cautiously increased.

Cannabis Indica is useful in whooping-cough in conjunction with bromides. Children bear it well, and it may be given in from 2 to 10 minim doses of the tincture, according to age.

ANTI-TOXINS.—Serotherapy.—The serum of animals which have been rendered immune to certain diseases, has been shown to possess medicinal powers of great value. Among the earliest experiments were those of Pasteur, who introduced an anti-rabic liquid as a cure for hydrophobia ; Koeh, Hericourt, and Richet tried serum inoculations, and antitoxins for tuberculous diseases, and notably phthisis ; Brown-Séguard for nervous ailments ; while Behring and Kitasato extended the system to the treatment of diphtheria ; and Cattani and Tizzoni to tetanus.

In all cases where the hypodermic injection of a prepared serum is used, a special syringe must be employed, which admits of thorough sterilization each time before use.

Diphtheria Antitoxin.—The British Institute of Preventive Medicine supplies a serum of which 200 units are a preventive dose, and for cases of moderate severity a dose of 1500 units is injected ; in very severe cases a dose of 3000 units may be used, and it is best in all cases to give a large initial dose, and follow this up by a smaller dose if it should be thought desirable. For children of two or three years, I have been in the habit of giving 1500 units, or 5 c.c. of the serum for the first dose, and repeating this in twenty-four hours if the case is severe. I can speak in

the highest terms of the value of this serum in diphtheria; but it should be used early in the disease. Fleeting erythematous eruptions occasionally follow its use.

Rabies Antitoxin for Hydrophobia.—This is used chiefly as a prophylactic. The death-rate under the Pasteur treatment, in Paris, has fallen from 200 per 1000 to 3 per 1000.

Sarcoma and Malignant Tumours.—Coley's fluid, which is a mixture of the toxins of streptococcus erysipelatosus and bacillus prodigiosus, can now be obtained from the British Institute of Preventive Medicine. It is supplied in phials, sterilized by 0·5 per cent. of phenol for hypodermic use. *Dose*: half a minim at first, injected near the tumour.

Septicæmia.—The anti-streptococcic serum is supplied in a liquid state in cases of three phials, 10 c.c. in each, and in a dry state, in tubes containing the equivalent of 10 c.c. of the liquid serum. It is recommended to use this serum as a prophylactic in cases which involve the risk of blood-poisoning. Good results have followed its use in erysipelas, septicæmia, ulcerative endocarditis, and severe scarlatina. The dose is 10 c.c. (which may be doubled in severe cases), and followed by smaller doses, 6 c.c. every six hours.

Tetanus Antitoxin.—The idea of curing tetanus by an animal extract is due to Cattani and Tizzoni of Italy. The antitoxin can be obtained in England, and Tizzoni's is considered the best. The British Institute of Preventive Medicine also supplies a tetanus antitoxin dose 10 to 20 c.c. every six or twelve hours, according to severity of symptoms. Other serums are sold under the names of Roux, and of Behring; the latter can be had both in powder or fluid, of which 500 units of the fluid are a single dose for an adult, or 1 gramme of the powder.

Typhoid Antitoxin.—It is too soon to say very much about this antitoxin, although there is every likelihood of the treatment becoming established. Favourable results have followed its use in the recent Maidstone epidemic; it should be used early in the disease, and about 3 drs. of the serum given daily.

ORGANOTHERAPY.—Animal Glands and Tissues and their Preparations.—**Red marrow of bone.** This may be had in tabloid form or as a glycerin extract. The tabloids contain 5 grs. each, and may be given 1 for a dose two, three, or more times daily, according to circumstances; of the glycerin extract from $\frac{1}{2}$ to 1

dr. is the dose. This remedy has been extensively used in pernicious anæmia, leucocythæmia, chlorosis, scorbutus, purpura, and hæmophilia with varying results.

Cerebrin and Myelin.—**Synonym:** Medullin. These are extracts of the brain and spinal cord of the sheep; 1 part by weight of the tissue to 1 volume of glycerin and 1 of chloroform water, or 0·5 per cent. of phenol solution. Of this glycerin extract 5 to 20 minims are injected hypodermically; tabloids of cerebrinin may be obtained from Burroughs and Wellcome containing 5 grs. in each, and of these one or more may be given two or three times daily. It has been used in epilepsy, chorea, hysteria, paralysis, and mental defect.

Spleen substance may be had in the form of an extract, of which 1 dr. is equal to 1 dr. of fresh spleen. This may be given in doses beginning with 1 dr., and increasing it up to an ounce; tabloids containing 5 grs. in each may be given 1 to 3 after meals, or the spleen may be reduced to pulp and given spread on bread. It has been used in anæmia, chlorosis, rickets, phthisis, and lymphadenoma with varying results.

Thyroid Gland Substance.—This may be given in the fresh state by mincing an eighth portion of a sheep's thyroid and spreading it between thin slices of bread; or it may be given in the form of liq. thyroidei, which is now officinal—5 minims once daily, gradually increased to 15 minims; or in the dry form, as a powder, or in pill or tabloid, 5 grs. for a dose. The gland has been used in myxædema, cretinism, goitre, obesity, and to assist the development of backward children; also in psoriasis, pityriasis rubra, ichthyosis, eczema, and lupus.

GAVAGE, or FORCED FEEDING.—This may become necessary in cleft palate, severe diphtheria, or paralysis of the pharynx. A piece of indiarubber tubing is passed far into the pharynx; an ordinary glass syringe filled with milk or other nutrient is attached to the tubing, and small quantities injected into the œsophagus at a time. Another method is by passing an indiarubber catheter through the nose into the pharynx and œsophagus, and injecting milk, beef-tea, or other nourishment.

STOMACH-WASHING.—This is indicated when decomposing curd is vomited. An indiarubber catheter is passed into the stomach, and connected with tubing to which a funnel is attached. A few ounces of warm 2-per-cent. solution of borax are introduced

into the funnel; the funnel is raised, which allows the fluid to flow into the stomach, and then lowered and inverted, to allow of its return; this is repeated until the fluid returns clean and sweet.

THE PULSE.—Very slight causes influence the pulse in childhood, so that during this period it is of less value in diagnosis and prognosis than during adult life.

<i>Age.</i>	<i>Rate.</i>
New-born infant	140 to 130 per minute.
Under one year	130 to 115 ,,
Under two years	115 to 100 ,,
Under three years	100 to 90 ,,
Seven to fourteen	90 to 80 ,,
Fourteen to eighteen	85 to 75 ,,

THE TEMPERATURE.—For most purposes this had better be taken in the fold of the groin, as it is very difficult to keep the thermometer in the axilla; for exact observations, in the rectum is undoubtedly the best, but care must be taken, first, that the thermometer be not broken by any sudden movement of the child, and second, that the whole thermometer be not driven into the rectum in the same way.

BODY WEIGHT.—At birth the average child weighs 7 lbs. There is a loss of 4 ozs. to 7 ozs. for the first two or three days, after which there should be a steady gain. It is important to weigh the infant every week, especially if it is being artificially fed, as this gives the surest information that the food it is getting is agreeing or otherwise.

DENTITION.—The teeth appear in the following order:—

Temporary Set.

The lower two central incisors from the sixth to the eighth month.			
The four upper incisors	„	„ eighth	„ tenth
The lower lateral	„	} „ twelfth	„ fourteenth
The upper and lower front molars			
The upper and lower canines		„ eighteenth	„ twentieth
The posterior molars		twenty-fourth	„ thirtieth

These remain unchanged for several years, during which time the permanent set are becoming developed, so that at six years of age there are a greater number of teeth in the jaws than at any other age, both sets being present, except the wisdom teeth.

Permanent Set.

Molar, first . . .	cut at 6 years of age
Incisors, central . . .	7 „
„ lateral . . .	8 „
Bicusplds, anterior . . .	9 „
„ posterior . . .	10 „
Canines . . .	11-12 „
Molars, second . . .	12-13 „
„ third . . .	17-25 „

Dentition is delayed by rickets, and it is generally believed that the teeth appear early in children the subject of congenital syphilis.

INCUBATION PERIODS.

Scarlatina	from twenty-four hours to three days; never exceeds seven days.
Erysipelas	„ three to seven days.
Diphtheria	„ two to seven days; rarely exceeds four days.
Measles	„ four to fourteen days.
German measles	„ eight to twenty-five days.
Small-pox	„ nine to fifteen days.
Chicken-pox	„ fourteen days, or from eleven to nineteen days.
Mumps	„ fourteen to twenty-five days.
Typhoid fever	„ seven to fourteen days.
Whooping-cough	„ four to fourteen days.

A child who has been exposed to infection should be disinfected and then isolated, and should not be allowed to go to school until the full period of incubation, of whatever disease he was exposed to, has passed.

ERUPTION PERIODS.

Day of illness on which the eruption is first seen :—

Chicken-pox	first day.
Scarlet fever	second „
Small-pox	third „
Measles	fourth „
German measles	second to fourth „
Typhus fever	fifth „
Typhoid fever	seventh to ninth „

DURATION OF INFECTION.—A child may return to school after—

Scarlatina.—When desquamation is complete; six, eight, or ten weeks.

Measles.—When desquamation is complete; three or four weeks.

German Measles.—In fourteen days from the disappearance of the rash.

Small-pox.—In six weeks after all crusts have disappeared.

Chicken-pox.—In one week after the crusts have disappeared.

Diphtheria.—After recovery: not less than three weeks from the beginning of the illness.

Mumps.—In a week after all swelling has gone.

Whooping-cough.—Not less than six weeks from the commencement, and then only if all cough and whooping have ceased.

Doses proportionate to Age.—The rule for finding the dose for children is usually thus given: divide the age by the age increased by 12; thus, for a child two years old $\frac{2}{2 + 12} = \frac{1}{7}$, thus the dose would be $\frac{1}{7}$. Exceptions to this rule must be made in the case of calomel, belladonna, hyoseyamus, and arsenic, all of which drugs children tolerate in large doses; while opium and all its preparations should be either entirely withheld or given in greatly diminished doses. Speaking generally, cathartics should be given to children in greater, and narcotics in lesser doses than are indicated by this rule.

PRESCRIPTIONS.



THE doses given are suitable for a child a year old, except where otherwise stated.

1. R : Liquoris arsenicalis ℥ $\frac{1}{2}$
 Sodii bicarbonatis gr. iii.
 Spt. chloroformi ℥ iii.
 Aquæ ad 5 i.
Misce.

Sig. : One teaspoonful three times daily.

2. R : Sodii bicarbonatis gr. ii.
 Tr. rhei ℥ iv.
 Spt. ammon. aromat. ℥ iii.
 Syrupi ℥ x.
 Aquæ ad 5 i.
Misce.

Sig. : One teaspoonful three times daily.

3. R : Hydrarg. c. cretæ gr. i.
 Sodii bicarbonatis
 Pulveris rhei, aa gr. ii.
Misce.

Sig. : A powder when required.

4. R : Acidi hydrochlorici
 dil ℥ iv.
 Vini pepsini ℥ x.
 Aquæ cinnamomi ad. 5 i.
Misce.

Sig. : A teaspoonful three times daily.

5. R : Spt. ammon. aromat. ℥ iii.
 Tinct. opii ℥ $\frac{1}{2}$
 Tinct. rhei ℥ iii.
 Spt. chloroformi ℥ iii.
 Aquæ cinnamomi ad 5 i.
Misce.

Sig. : A teaspoonful three times daily.

6. R : Pulv. Doveri gr. i.
 Sodii bicarbonatis gr. iii.
 Bismuthi salicylat. gr. iii.
Misce.

Sig. : A powder each night. For a child of three to five years.

7. R : Tinct. nucis vomicæ ℥ $\frac{1}{2}$
 Tinct. belladonnæ ℥ ii.
 Infusi sennæ ℥ xx.
 Infusi gentianæ comp.
 ad 5 i.
Misce.

Sig. : One teaspoonful three times daily before meals.

8. R : Pulv. ferri sulph. ex-
 siccæ gr. ii.
 Pil. aloes et myrrhæ gr. iii.
ft. Pil.

Sig. : One pill each night. For a child of six to nine years.

Sir Andrew Clark's Pill.

9. R: Podophylli
Ext. belladonnæ, āā gr. $\frac{1}{8}$
ft. Pil.

Sig.: One pill at bedtime. For a child of five to eight years.

10. R: Argenti nitratis . gr. $\frac{1}{8}$ – $\frac{1}{10}$
Acidi nitrici dil. ℥ iv.
Aquæ ad ʒ i.
Misce.

Sig.: One teaspoonful three times daily. For a child of five to eight years.

11. R: Ext. hæmatoxyli . gr. iii.
Tinct. opii ℥ iii.
Vini ipecacuanhæ . ℥ iv.
Mist. cretæ ad ʒ i.
Misce.

Sig.: A teaspoonful three times daily. For a child of five to eight years.

12. R: Acidi gallici gr. iv.
Acidi sulphurici dil. ℥ v.
Tinct. opii ℥ iii.
Glycerini ℥ x.
Aquæ ad ʒ i.
Misce.

Sig.: A teaspoonful for a child of five years, three times daily.

13. R: Pulv. cretæ aromat. gr. v.
Bismuthi carbonatis gr. x.
Tinct. opii ℥ iii.
Aquæ cinamomi ad ʒ i.
Misce.

Sig.: One teaspoonful for a child five years old, three times daily.

14. R: Tinct. ferri perchlo-
ridi ℥ x.
Acidi acetic dil. ℥ x.
Liq. ammoniæ acc-
tatis ℥ xx.

- Spt. chloroformi ℥ x.
Aquæ ad ʒ ii.
Misce.

Sig.: Two teaspoonfuls three times daily. For a child of ten or twelve years.

15. R: Tinct. nucis vomicæ ℥ $\frac{1}{2}$
Sodii bicarbonatis . gr. iii.
Glycerini ℥ x.
Aquæ cinamomi ad ʒ i.
Misce.

Sig.: One teaspoonful three times daily.

16. R: Sodii phosphatis . gr. x.
Spt. chloroformi ℥ v.
Infusi rhci ad ʒ i.
Misce.

Sig.: A teaspoonful three times daily. For a child of three or four years.

17. R: Sodii bicarbonatis . gr. x.
Tinct. nucis vomicæ ℥ iii.
Spt. chloroformi ℥ v.
Infusi calumbæ ad ʒ ii.
Misce.

Sig.: Two teaspoonfuls three times daily. For a child of eight to twelve years.

18. R: Potassii iodidi gr. iii.
Ferri tartarati gr. v.
Glycerini ℥ x.
Aquæ ad ʒ i.
Misce.

Sig.: One teaspoonful three times daily. For a child of five years.

19. R: Vini ipecacuanhæ ℥ iii.
Spiritus ætheris ni-
trosi ℥ v.
Tinct. opii camph. ℥ v.
Liq. ammon. aceta-
tatis ℥ x.

Syrupi ℥ x.
 Aquæ ad ʒ i.
 Misce.

Sig.: One teaspoonful every three hours in water. For a child of three to five years.

20. R: Syr. ferri iodidi . . . ℥ v.
 Syrupi ad ʒ i.
 Misce.

Sig.: One teaspoonful three times daily.

21. R: Syr. hypophosphatis co.
 (Fellows) ℥ x.
 Syrupi ad ʒ i.
 Misce.

Sig.: One teaspoonful three times daily.

22. R: Ammou. carbonatis gr. i.
 Tr. digitalis ℥ ii.
 Spt. ammon. aro-
 mat. ℥ iii.
 Tinct. scillæ ℥ iil.
 Infusi senegæ ℥ x.
 Aquæ ad ʒ i.
 Misce.

Sig.: One teaspoonful every three hours.

23. R: Tinct. lobeliæ eth. . . ℥ v.
 Glycerini ℥ x.
 Aquæ ad ʒ i.
 Misce.

Sig.: One teaspoonful every third hour. For a child of three years.

24. R: Ol. terebinthinæ . . . ℥ xl.
 Ol. ricini ʒ ii.
 Syr. limonis ʒ ss.
 Mucilaginis traga-
 canth. ʒ i.
 Aquæ menth. pip. ad. ʒ i.
 Misce.

Sig.: The draught to be taken in the morning. For a child of six or eight years.

25. R: Liquoris arsenicalis . . ℥ iii.
 Tinct. ferri perchlo-
 ridi ℥ x.
 Spt. chloroformi . . . ℥ vi.
 Aquæ ad ʒ ii.
 Misce.

Sig.: Two teaspoonfuls three times daily in water. For a child of six or eight years.

26. R: Potass. acetatis vel
 citratis gr. v.
 Spt. ætheris nitrosi . . . ℥ x.
 Tinct. digitalis ℥ iii.
 Tr. scillæ ℥ iii.
 Infusi juniperi ad . . ʒ ii.
 Misce.

Sig.: Two teaspoonfuls in water every four hours. For a child of eight or ten years.

27. R: Sodii bicarbonatis . . gr. x.
 Liq. opii sedativ. . . . ℥ x.
 Aquæ ad ʒ i.
 Misce.

Sig.: The lotion to be applied frequently.

28. R: Sodii salicylatis . . . gr. v.
 Liq. ammou. acetatis . . ℥ xx.
 Syr. aurant. ℥ x.
 Aquæ ad ʒ i.
 Misce.

Sig.: One teaspoonful every three hours. For a child of five or six years.

29. R: Salicin gr. x.

Sig.: A powder to be given every six hours. For a child of eight to ten years.

30. R: Sodii salicylatis
 Sodii bicarbonatis, ʒā gr. vi.

Syrupi aurant. . . . ℥ xv.
 Aquæ ad 5 i.
 Misce.

Sig. One teaspoonful every three hours. For a child of five or six years.

31. R: Sodii bicarbonatis . . gr. v.
 Tr. belladonnæ ℥ v.
 Spt. chloroformi ℥ v.
 Aquæ ad 5 i.
 Misce.

Sig.: One teaspoonful three times daily. For a child of three or four years.

32. R: Sodii phosphatis . . gr. x.
 Ferri tartarati gr. v.
 Syr. aurant. . . . ℥ xx.
 Aquæ ad 5 i.
 Misce.

Sig.: One teaspoonful twice daily.

INDEX.



Achondroplasy, 208
 Adænia, 151
 Anæmia, 149
 lymphatica, 151
 pernicious, 150
 simple, 149
 splenica, 150
 with œdema, 149
 Antipyretic methods, 226
 Antitoxins, 229
 Appendix, 225
 Arrowroot water, 225
 Artificial feeding, 9
 Ascites, 50
 Atalectasis, congenital, 106
 post-natal, 107
 pulmonum, 106
 Barley-water, 225
 Baths, 227
 Bednar's aphthæ, 19
 Bile ducts, obstruction of, 56
 Body weight, 232
 Bowels, obstruction of, 46
 ulceration of, 51
 Bright's disease, acute, 196
 symptoms of, 196
 treatment of, 197
 chronic, 198
 diagnosis of, 200
 symptoms of, 199
 treatment of, 201
 Bronchitis, 108
 symptoms of, 109
 treatment of, 110
 Broncho-pneumonia, 111
 diagnosis of, 117
 physical signs of, 115
 treatment of, 118

Cancrum oris, 20
 Cerebral hæmorrhage, 171
 Chicken-pox, 83
 Chin-cough, 91
 Cholera infantum, 30
 Choreæ, 168
 pathology of, 169
 treatment of, 170
 Constipation, 31
 Convulsions, 164
 treatment of, 165
 Craniotabes, 206
 Cretinism, sporadic, 209
 Croup, true, 103
 spasmodic, 135
 Cynanche parotidea, 96
 Dentition, 232
 Diarrhœa, 27
 inflammatory, 28
 simple, 27
 zymotic, 30
 Diphtheria, 97
 laryngeal, 103
 symptoms of, 98
 treatment of, 101
 Duration of infection, 233
 Dysentery, 33
 Emetics, 228
 Endocarditis, 143
 Enteric fever, 85
 Enterocolitis, 28
 Enuresis, 191
 Epilepsy, 166
 treatment of, 167
 Erysipelas, 104
 Febris rubra, 70

- Feeding bottles, 12
forced feeding, 231
Foetal rickets, 208
- Gangrene, spontaneous, 221
Gastric catarrh, acute, 23
chronic, 24
Gavage, 231
Glandular fever, 89
Grissole sign, 68
- Hæmophilia, 158
Harrison's sulcus, 206
Heart disease, acute, 143
chronic, 145
congenital, 147
Hemichorea, 170
Henoch's disease, 156
Hodgkin's disease, 151
Hot packs, 227
Hydrocephalus, acute, 189
chronic, 189
- Icterus, neonatorum, 55
Incontinence of urine, 191
Incubation periods, 233
Infant feeding, 7
Infantile scurvy, 209
Infection, duration of, 233
Intussusception, 46
- Jaundice, catarrhal, 57
malignant, 58
- Koplik's spots, 65
- Laryngismus stridulus, 132
diagnosis of, 133
treatment of, 134
Laryngitis, catarrhal, 135
diagnosis of, 136
treatment of, 137
Leucocythæmia, 153
Liver, diseases of, 54
abscess of, 63
acute yellow atrophy, 58
amyloid, 61
cirrhosis of, 58
fatty, 60
hydatid of, 62
Lung, collapse of, 106
tuberculosis of, 125
Lymphadenoma, 151
- Measles, 64
diagnosis of, 67
prognosis in, 68
treatment of, 68
- Measles—
black, 66
German, 69
Meat juice, raw-, 225
pulp, raw-, 226
Meig's mixture, 11
Meningitis, acute, 174
cerebro-spinal, 174
chronic, 174
tubercular, 174
Milk, condensed, 14
cow's, 10
goat's, 9
human, 10
peptonized, 16
sterilized, 13
sterilizers, 225
Mumps, 96
Mustard bath, 227
Mutton tea, 226
Myelitis, 187
- Narcotics, 228
Noma, 20
- Oatmeal bath, 228
water, 225
Organotherapy, 230
- Packs, hot, 227
wet, 227
Paralysis, acute infantile, 180
diagnosis of, 182
pathology of, 182
treatment of, 184
facial, 190
pseudo-hypertrophic, 185
Paraplegia, 192
Parotitis, 96
Pericarditis, 138
symptoms and signs of, 139
treatment of, 141
Peritonitis, acute, 41
chronic, 44
Perityphlitis, 48
Pertussis, 91
treatment of, 94
Phthisis, acute, 125
chronic, 127
diagnosis of, 129
Pleurisy, 119
diagnosis of, 121
symptoms of, 119
treatment of, 122
Pneumonia, croupous, 111
pathology of, 116
treatment of, 113
catarrhal, 114

- Pneumonia—
 diagnosis of, 117
 pathology of, 116
 symptoms of, 115
 treatment of, 118
 Prolapsus recti, 52
 Pulse, in children, 232
 Purpura, 155

 Quincke, 55

 Rabies antitoxin, 230
 Raynaud's disease, 221
 Red marrow of bone, 230
 Rheumatism, 216
 associations of, 217
 symptoms of, 217
 treatment of, 220
 Ricket's, acute, 209
 congenital, 208
 symptoms of, 205
 treatment of, 208
 Roseola, epidemic, 69
 Rötheln, 69
 Rubella, 69

 Scarlatina, 70
 anginosa, 74
 complications of, 75
 maligna, 74
 simplex, 71
 treatment, 77
 Scurvy, 154
 infantile, 209
 Serotherapy, 229
 Small-pox, 79
 diagnosis of, 81
 treatment of, 82
 varieties of, 81
 Splenic, anæmia, 150
 Sponging, 226

 Stomatitis, aphthous, 18,
 catarrhal, 16
 gangrenous, 20
 parasitic, 21
 ulcerative, 19
 Syphilis, acquired, 211
 hereditary, 212
 symptoms of, 213
 treatment, 215

 Tetanus, 162
 Tetany, 160
 Thrush, 21
 Tubercular peritonitis, 44
 Tuberculosis, acute miliary, 202
 Tumour of brain, 179
 Typhilitis, 48
 Typhoid fever, 85
 diagnosis of, 87
 symptoms of, 86
 treatment of, 88

 Ulceration of Bowels, 51

 Vapour baths, 227
 Varicella, 83
 bullosa, 84
 diagnosis of, 81
 gangrenous, 84
 symptoms of, 83
 treatment of, 85

 Weight, body, 232
 Wet-nurses, 9
 Whey, to make, 225
 Whooping-cough, 91
 pathology of, 92
 symptoms of, 91
 treatment of, 94
 Worms, round, 39
 tapeworm, 40
 thread, 38



